511,556

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 October 2003 (23.10.2003)

PCT

(10) International Publication Number
WO 03/087158 A2

(51) International Patent Classification[7]: C07K 14/70, C12Q 1/68, G01N 33/68

(21) International Application Number: PCT/EP03/03713

(22) International Filing Date: 10 April 2003 (10.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/372,899 16 April 2002 (16.04.2002) US
60/375,139 22 April 2002 (22.04.2002) US

(71) Applicant *(for all designated States except US)*: **BAYER AKTIENGESELLSCHAFT** [DE/DE]; 51368 Leverkusen (DE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHIROO, Masahiro** [JP/GB]; 20 Lady Jermy Way, Teversham, Cambridgeshire CB1 5BE (GB). **YAMAMOTO, Noriyuki** [JP/JP]; 6-6-1-3-404, Jingu, Nara-shi, Nara 631-0804 (JP). **HAYASHI, Fumihiko** [JP/JP]; 5-1-3-17-402, Kabutodai, Kizu-cho, Soraku-gun, Kyoto 619-0224 (JP). **FLOECKNER, Johannes** [AT/JP]; 8-9-601, Higashikozu-cho, Tennoji-ku, Osaka-shi, Osaka 543-0021 (JP). **REINEMER, Peter** [DE/DE]; Am Eckbusch 35/48, 42113 Wuppertal (DE). **ENCINAS, Jeffrey** [US/JP]; 464-1-1401, Toroyamacho, Nishikikoji-sagaru, Nishinotoindori, Nakagyo-ku, Kyoto-shi, Kyoto 604-8225 (JP). **WATANABE, Shinichi** [JP/JP]; 6-3-1-504, Jingu, Nara-shi, Nara 631-0804 (JP). **TAJIMI, Masaomi** [JP/JP]; 1-8-17, Sakuragaoka, Seika-cho, Soraku-gun, Kyoto 619-0232 (JP). **KOKUBO, Toshio** [JP/JP]; 3-15-18B, Jingu, Nara-shi, Nara 631-0804 (JP).

(74) Common Representative: **BAYER AKTIENGESELLSCHAFT**; 51368 Leverkusen (DE).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REGULATION OF HUMAN TRANSIENT RECEPTOR POTENTIAL CHANNEL

(57) Abstract: Reagents which regulate human transient receptor potential channel and reagents which bind to human transient receptor potential channel gene products can play a role in preventing, ameliorating, or correcting dysfunctions or diseases including, but not limited to, urinary incontinence, overactive bladder, benign prostatic hyperplasia, lower urinary tract syndromes, and CNS disorders.

WO 03/087158 A2

SEQUENCE LISTING

<110> Bayer AG

<120> Regulation of human transient receptor potential channel

<130> RCK-27

<140>
<141>

<150> US60/372899
<151> 2002-04-16

<150> US60/375139
<151> 2002-04-22

<160> 21

<170> PatentIn Ver. 2.1

<210> 1
<211> 5668
<212> DNA
<213> Homo sapiens

<400> 1
gtcacttagg aaaaggtgtc ctttcgggca gccgggctca gcatgaggaa cagaaggaat 60
gacactctgg acagcacccg gaccctgtac tccagcgcgt ctcggagcac agacttgtct 120
tacagtgaaa gcgacttggt gaatttttatt caagcaaatt ttaagaaacg agaatgtgtc 180
ttctttacca aagattccaa ggccacggag aatgtgtgca agtgtggcta tgcccagagc 240
cagcacatgg aaggcaccca gatcaaccaa agtgagaaat ggaactacaa gaaacacacc 300
aaggaatttc ctaccgacgc ctttggggat attcagtttg agacactggg gaagaaaggg 360
aagtatatac gtctgtcctg cgacacggac gcggaaatcc tttacgagct gctgacccag 420
cactggcacc tgaaaacacc caacctggtc atttctgtga ccgggggcgc caagaacttc 480
gccctgaagc cgcgcatgcg caagatcttc agccggctca tctacatcgc gcagtccaaa 540
ggtgcttgga ttctcacggg aggcacccat tatggcctga cgaagtacat cggggaggtg 600
gtgagagata acaccatcag caggagttca gaggagaata ttgtggccat tggcatagca 660
gcttggggca tggtctccaa ccgggacacc ctcatcagga attgcgatgc tgagggctat 720
tttttagccc agtaccttat ggatgacttc acaagggatc cactgtatat cctggacaac 780
aaccacacac atttgctgct cgtggacaat ggctgtcatg gacatcccac tgtcgaagca 840
aagctccgga atcagctaga gaagcatatc tctgagcgca ctattcaaga ttccaactat 900
ggtggcaaga tccccattgt gtgttttgcc caaggaggtg gaaaagagac tttgaaagcc 960
atcaatacct ccatcaaaaa taaaattcct tgtgtggtgg tggaaggctc gggccggatc 1020
gctgatgtga tcgctagcct ggtggaggtg gaggatgccc cgacatcttc tgccgtcaag 1080
gagaagctgg tgcgcttttt accccgcacg gtgtcccggc tgtctgagga ggagactgag 1140
agttggatca aatggctcaa agaaattctc gaatgttctc acctattaac agttattaaa 1200
atggaagaag ctggggatga aattgtgagc aatgccatct cctacgctct atacaaagcc 1260
ttcagcacca gtgagcaaga caaggataac tggaatgggc agctgaagct tctgctggag 1320
tggaaccagc tggacttagc caatgatgag attttcacca atgaccgccg atgggagtct 1380
gctgaccttc aagaagtcat gtttacggct ctcataaagg acagacccaa gtttgtccgc 1440
ctctttctgg agaatggctt gaacctacgg aagttctcta cccatgatgt cctcactgaa 1500
ctctttctcca accacttcag cacgcttgtg taccggaatc tgcagatcgc caagaattcc 1560
tataatgatg ccctcctcac gtttgtctgg aaactggttg cgaacttccg aagaggcttc 1620
cggaaggaag acagaaatgg ccgggacgag atggacatag aactccacga cgtgtctcct 1680
attactcggc acccctgca agctctcttc atctgggcca ttcttcagaa taagaaggaa 1740
ctctccaaag tcatttggga gcagaccagg ggctgcactc tggcagccct gggagccagc 1800
aagcttctga agactctggc caaagtgaag aacgacatca atgctgctgg ggagtccgag 1860
gagctggcta atgagtacga gacccgggct gttgagctgt tcactgagtg ttacagcagc 1920
gatgaagact tggcagaaca gctgctggtc tattcctgtg aagcttgggg tggaagcaac 1980
tgtctggagc tggcggtgga ggccacagac cagcatttca ccgcccagcc tggggtccag 2040
aatttttctt ctaagcaatg gtatggagag atttcccgag acaccaagaa ctggaagatt 2100
atcctgtgtc tgtttattat acccttggtg ggctgtggct ttgtatcatt taggaagaaa 2160
cctgtcgaca agcacaagaa gctgctttgg tactatgtgg cgttcttcac ctccccctc 2220
gtggtcttct cctggaatgt ggtcttctac atcgccttcc tcctgctgtt tgcctacgtg 2280
ctgctcatgg atttccattc ggtgccacac ccccccgagc tggtcctgta ctcgctggtc 2340
tttgtcctct tctgtgatga agtgagacag tggtacgtaa atgggggtgaa ttatttttact 2400

gacctgtgga atgtgatgga cacgctgggg ctttttttact tcatagcagg aattgtattt 2460
cggctccact cttctaataa aagctctttg tattctggac gagtcatttt ctgtctggac 2520
tacattattt tcactctaag attgatccac atttttactg taagcagaaa cttaggaccc 2580
aagattataa tgctgcagag gatgctgatc gatgtgttct tcttcctgtt cctctttgcg 2640
gtgtggatgg tggcctttgg cgtggccagg caagggatcc ttaggcagaa tgagcagcgc 2700
tggaggtgga tattccgttc ggtcatctac gagccctacc tggccatgtt cggccaggtg 2760
cccagtgacg tggatggtac cacgtatgac tttgcccact gcaccttcac tgggaatgag 2820
tccaagccac tgtgtgtgga gctggatgag cacaacctgc cccggttccc cgagtggatc 2880
accatccccc tggtgtgcat ctacatgtta tccaccaaca tcctgctggt caacctgctg 2940
gtcgccatgt ttggctacac ggtgggcacc gtccaggaga acaatgacca ggtctggaag 3000
ttccagaggt acttcctggt gcaggagtac tgcagccgcc tcaatatccc cttccccttc 3060
atcgtcttcg cttacttcta catggtggtg aagaagtgct tcaagtgttg ctgcaaggag 3120
aaaaacatgg agtcttctgt ctgctgtttc aaaaatgaag acaatgagac tctggcatgg 3180
gagggtgtca tgaaggaaaa ctaccttgtc aagatcaaca caaaagccaa cgacacctca 3240
gaggaaatga ggcatcgatt tagacaactg gataçaaagc ttaatgatct caagggtctt 3300
ctgaaagaga ttgctaataa aatcaaataa aactgtatga aactctaatg gagaaaaatc 3360
taattatagc aagatcatat taaggaatgc tgatgaacaa ttttgctatc gactactaaa 3420
tgagagattt tcagacccct gggtacatgg tggatgattt taaatcaccc tagtgtgctg 3480
agaccttgag aataaagtgt gtgattggtt tcatacttga agacggatat aaaggaagaa 3540
tatttccttt atgtgtttct ccagaatggt gcctgtttct ctctgtgtct caatgcctgg 3600
gactggaggt tgatagttta agtgtgttct taccgcctcc tttttccttt aatcttattt 3660
ttgatgaaca catatatagg agaacatcta tcctatgaat aagaacctgg tcatgcttta 3720
ctcctgtatt gttatttttgt tcatttccaa ttgattctct acttttcccct tttttgtatt 3780
atgtgactaa ttagttggca tattgttaaa agtctctcaa attaggccag attctaaaac 3840
atgctgcagc aagaggaccc cgctctcttc aggaaaagtg ttttcatttc tcaggatgct 3900
tcttacctgt cagaggaggt gacaaggcag tctcttgctc tcttggactc accaggctcc 3960
tattgaagga accacccccа ttcctaaata tgtgaaaagt cgcccaaaat gcaaccttga 4020
aaggcactac tgactttgtt cttattggat actcctctta tttattattt ttccattaaa 4080
aataatagct ggctattata gaaaatttag accatacaga gatgtagaaa gaacataaat 4140
tgtccccatt accttaaggt aatcactgct aacaatttct ggatggtttt tcaagtctat 4200
ttttttttcta tgtatgtctc aattctcttt caaaatttta cagaatgtta tcatactaca 4260
tatatacttt ttatgtaagc tttttcactt agtattttat caaatatgtt tttattatat 4320
tcatagcctt cttaaacatt atatcaataa ttgcataata ggcaacctct agcgattacc 4380
ataattttgc tcattgaagg ctatctccag ttgatcattg ggatgagcat ctttgtgcat 4440
gaatcctatt gctgtatttg ggaaaatttt ccaaggttag attccaataa atatctattt 4500
attattaaat attaaaatat cgatttatta ttaaaaccat ttataaggct ttttcataaa 4560
tgtatagcaa ataggaatta ttaacttgag cataagatat gagatacatg aacctgaact 4620
attaaaataa aatattatat ttaaccctag tttaagaaga agtcaatatg cttatttaaa 4680
tattatggat ggtgggcaga tcacttgagg tcaggagttc gagaccagcc tggccaacat 4740
ggcaaaacca catctctact aaaaataaaa aaattagctg ggtgtggtgg tgcactcctg 4800
taatcccagc tactcagaag gctgaggtac aagaattgct ggaacctggg aggcggaggt 4860
tgcagtgaac caagattgca ccactgcact ccagccgggg tgacagagtg agactccgac 4920
tgaaaataaa taaataaata aataaataaa taaataaata aatattatgg atggtgaagg 4980
gaatggtata gaattggaga gattatctta ctgaacacct gtagtcccag ctttctctgg 5040
aagtggtggt atttgagcag gatgtgcaca aggcaattga aatgcccata attagtttct 5100
cagctttgaa tacactataa actcagtggc tgaaggagga aattttagaa ggaagctact 5160
aaaagatcta atttgaaaaa ctacaaaagc attaactaaa aaagtttatt ttccttttgt 5220
ctgggcagta gtgaaaataa ctactcacaa cattcactat gtttgcaagg aattaacaca 5280
aataaaagat gccttttttac ttaaacgcca agacagaaaa cttgcccaat actgagaagc 5340
aacttgcatt agagagggaa ctgttaaatg ttttcaaccc agttcatctg gtggatgttt 5400
ttgcaggtta ctctgagaat tttgcttatg aaaaatcatt atttttagtg tagttcacaa 5460
taatgtattg aacatacttc taatcaaagg tgctatgtcc ttgtgtatgg tactaaatgt 5520
gtcctgtgta cttttgcaca actgagaatc ctgcggcttg gtttaatgag tgtgttcatg 5580
aaataaataa tggaggaatt gtcaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 5640
aaaaaaaaaa aaaaaaaaaa aaaaaaaa 5668

<210> 2
<211> 3639
<212> DNA
<213> Homo sapiens

<400> 2
gattacgcaa gctatttagg tgacactata gaatwctcag cttgcatcaa gcttggtacc 60
gagctcggat ccctagtaac ggccgccagt gtgctggaat tcgcccttgc agccgggctc 120
agcatgagga acagaaggaa tgacactctg gacagcaccc ggaccctgta ctccagcgcg 180
tctcggagca cagacttgtc ttacagtgaa agcgacttgg tgaattttat tcaagcaaat 240
tttaagaaac gagaatgtgt cttctttacc aaagattcca aggccacgga gaatgtgtgc 300

aagtgtggct atgcccagag ccagcacatg gaaggcaccc agatcaacca aagtgagaaa 360
tggaactaca agaaacacac caaggaattt cctaccgacg cctttgggga tattcagttt 420
gagacactgg ggaagaaagg gaagtatata cgtctgtcct gcgacacgga cgcggaaatc 480
ctttacgagc tgctgaccca gcactggcac ctgaaaacac ccaacctggt catttctgtg 540
accgggggcg ccaagaactt cgccctgaag ccgcgcatgc gcaagatctt cagccggctc 600
atctacatcg cgcagtccaa aggtgcttgg attctcacgg gaggcaccca ttatggcctg 660
atgaagtaca tcggggaggt ggtgagagat aacaccatca gcaggagttc agaggagaat 720
attgtggcca ttggcatagc agcttggggc atggtctcca accgggacac cctcatcagg 780
aattgcgatg ctgagggcta ttttttagcc cagtaccttа tggatgactt cacaagagat 840
ccactgtata tcctggacaa caaccacaca catttgctgc tcgtggacaa tggctgtcat 900
ggacatccca ctgtcgaagc aaagctccgg aatcagctag agaagtatat ctctgagcgc 960
actattcaag attccaacta tggtggcaag atccccattg tgtgttttgc ccaaggaggt 1020
ggaaaagaga ctttgaaagc catcaatacc tccatcaaaa ataaaattcc ttgtgtggtg 1080
gtggaaggct cgggccagat cgctgatgtg atcgctagcc tggtggaggt ggaggatgcc 1140
ctgacatctt ctgccgtcaa ggagaagctg gtgcgctttt taccccgcac ggtgtcccgg 1200
ctgcctgagg aggagactga gagttggatc aaatggctca aagaaattct cgaatgttct 1260
cacctattaa cagttattaa aatggaagaa gctggggatg aaattgtgag caatgccatc 1320
tcctacgctc tatacaaagc cttcagcacc agtgagcaag acaaggataa ctggaatggg 1380
cagctgaagc ttctgctgga gtggaaccag ctggacttag ccaatgatga gattttcacc 1440
aatgaccgcc gatgggagtc tgctgacctt caagaagtca tgtttacggc tctcataaag 1500
gacagaccca agtttgtccg cctctttctg gagaatggct tgaacctacg gaagtttctc 1560
acccatgatg tcctcactga actcttctcc aaccacttca gcacgcttgt gtaccggaat 1620
ctgcagatcg ccaagaattc ctataatgat gccctcctca cgtttgtctg gaaactggtt 1680
gcgaacttcc gaagaggctt ccggaaggaa gacagaaatg gccgggacga gatggacata 1740
gaactccacg acgtgtctcc tattactcgg caccccctgc aagctctctt catctgggcc 1800
attcttcaga ataagaagga actctccaaa gtcatttggg agcagaccag gggctgcact 1860
ctggcagccc tgggagccag caagcttctg aagactctgg ccaaagtgaa gaacgacatc 1920
aatgctgctg gggagtccga ggagctggct aatgagtacg agacccgggc tgttgagctg 1980
ttcactgagt gttacagcag cgatgaagac ttggcagaac agctgctggt ctattcctgt 2040
gaagcttggg gtggaagcaa ctgtctggag ctggcggtgg aggccacaga ccagcatttc 2100
atcgcccagc ctggggtcca gaattttctt tctaagcaat ggtatggaga gatttcccga 2160
gacaccaaga actggaagat tatcctgtgt ctgtttatta taccttggt gggctgtggc 2220
tttgtatcat ttaggaagaa acctgtcgac aagcacaaga agctgctttg gtactatgtg 2280
gcgttcttca cctcccccctt cgtggtcttc tcctggaatg tggtcttcta catcgccttc 2340
ctcctgctgt ttgcctacgt gctgctcatg gatttccatt cggtgccaca ccccccgag 2400
ctggtcctgt actcgctggt ctttgtcctc ttctgtgatg aagtgagaca gtggtacgta 2460
aatggggtga attattttac tgacctgtgg aatgtgatgg acacgctggg gctttttac 2520
ttcatagcag gaattgtatt tcggctccac tcttctaata aaagctcttt gtattctgga 2580
cgagtcattt tctgtctgga ctacattatt ttcactctaa gattgatcca cattttact 2640
gtaagcagaa acttaggacc caagattata atgctgcaga ggatgctgat cgatgtgttc 2700
ttcttcctgt tcctctttgc ggwgtggatg gtggcctttg gcgtggccag gcaagggatc 2760
cttaggcaga atgagcagcg ctggaggtgg atattccgtt cggtcatcta cgagccctac 2820
ctggccatgt tcggccaggt gcccagtgac gtggatggta ccacgtatga ctttgcccac 2880
tgcaccttca ctgggaatga gtccaagcca ctgtgtgtgg agctggatga gcacaacctg 2940
ccccggttcc ccgagtggat caccatcccc ctggtgtgca tctacatgtt atccaccaac 3000
atcctgctgg tcaacctgct ggtcgccatg tttggctaca cggtgggcac cgtccaggag 3060
aacaatgacc aggtctggaa gttccagagg tacttcctgg tgcaggagta ctgcagccgc 3120
ctcaatatcc ccttcccctt catcgtcttc gcttacttct acatggtggt gaagaagtgc 3180
ttcaagtgtt gctgcaagga gaaaaacatg gagtcttctg tctgctgttt caaaaatgaa 3240
gacaatgaga ctctggcatg ggagggtgtc atgaaggaaa actaccttgt caagatcaac 3300
acaaaagcca acgacacctc agaggaaatg aggcatcgat ttagacaact ggatacaaag 3360
cttaatgatc tcaagggtct tctgaaagag attgctaata aaatcaaata aaactgtatg 3420
aactctaatg gagaaaaatc taattatagc aagatcatat taaggaatgc tgatgaacaa 3480
ttttgctatc gactactaaa tgagagattt tcagacccct gggtacatgg tggatgattt 3540
taaatcaccc tagtgtgctg agaccttgag aataaagtgt gaagggcgaa ttctgcagat 3600
atccatcaca ctggcggccg ctcgagcatg catctagag 3639

<210> 3
<211> 3042
<212> DNA
<213> Homo sapiens

<400> 3
atggttggag gatgcaggtg gacagaagac gtggagcctg cagaagtaaa ggaaaagatg 60
tcctttcggg cagccaggct cagcatgagg aacagaagga atgacactct ggacagcacc 120
cggaccctgt actccagcgc gtctcggagc acagacttgt cttacagtga aagcgacttg 180
gtgaatttta ttcaagcaaa ttttaagaaa cgagaatgtg tcttctttac caaagattcc 240

aaggccacgg agaatgtgtg caagtgtggc tatgcccaga gccagcacat ggaaggcacc 300
cagatcaacc aaagtgagaa atggaactac aagaaacaca ccaaggaatt tcctaccgac 360
gcctttgggg atattcagtt tgagacactg gggaagaaag ggaagtatat acgtctgtcc 420
tgcgacacgg acgcggaaat cctttacgag ctgctgaccc agcactggca cctgaaaaca 480
cccaacctgg tcatttctgt gaccgggggc gccaagaact tcgccctgaa gccgcgcatg 540
cgcaagatct tcagccggct catctacatc gcgcagtcca aaggtgcttg gattctcacg 600
ggaggcaccc attatggcct gatgaagtac ctcggggagg tggtgagaga taacaccatc 660
agcaggagtt cagaggagaa tattgtggcc attggcatag cagcttgggg catggtctcc 720
aaccgggaca ccctcatcag gaattgcgat gctgagggct atttttagc ccagtacctt 780
atggatgact tcacaagaga tccactgtat atcctggaca acaaccacac acatttgctg 840
ctcgtggaca atggctgtca tggacatccc actgtcgaag caaagctccg gaatcagcta 900
gagaagtata tctctgagcg cactattcaa gattccaact atggtggcaa gatccccatt 960
gtgtgttttg cccaaggagg tggaaaagag actttgaaag ccatcaatac ctccatcaaa 1020
aataaaattc cttgtgtggt ggtggaaggc tcgggccaga tcgctgatgt gatcgctagc 1080
ctggtggagg tggaggatgc cctgacatct tctgccgtca aggagaagct ggtgcgcttt 1140
ttaccccgca cggtgtcccg gctgcctgag gaggagactg agagttggat caaatggctc 1200
aaagaaattc tcgaatgttc tcacctatta acagttatta aaatggaaga agctggggat 1260
gaaattgtga gcaatgccat ctcctacgct ctatacaaag ccttcagcac cagtgagcaa 1320
gacaaggata actggaatgg gcagctgaag cttctgctgg agtggaacca gctggactta 1380
gccaatgatg agattttcac caatgaccgc cgatgggaga agagcaaacc gaggctcaga 1440
gacacaataa tccaggtcac atggctggaa aatggtagaa tcaaggttga gagcaaagat 1500
gtgactgacg gcaaagcctc ttctcatatg ctggtggttc tcaagtctgc tgaccttcaa 1560
gaagtcatgt ttacggctct cataaaggac agacccaagt ttgtccgcct ctttctggag 1620
aatggcttga acctacggaa gtttctcacc catgatgtcc tcactgaact cttctccaac 1680
cacttcagca cgcttgtgta ccggaatctg cagatcgcca agaattccta taatgatgcc 1740
ctcctcacgt ttgtctggaa actggttgcg aacttccgaa gaggcttccg gaaggaagac 1800
agaaatggcc gggacgagat ggacatagaa ctccacgacg tgtctcctat tactcggcac 1860
cccctgcaag ctctcttcat ctgggccatt cttcagaata agaaggaact ctccaaagtc 1920
atttgggagc agaccagggg ctgcactctg gcagccctgg gagccagcaa gcttctgaag 1980
actctggcca aagtgaagaa cgacatcaat gctgctgggg agtccgagga gctggctaat 2040
gagtacctga cccgggctgt tggtgagtcc acagtgtgga atgctgtggt gggcgcggat 2100
ctgccatgtg gcacagacat tgccagcggc actcatagac cagatggtgg agagctgttc 2160
actgagtgtt acagcagcga tgaagacttg gcagaacagc tgctggtcta ttcctgtgaa 2220
gcttggggtg gaagcaactg tctggagctg gcggtggagg ccacagacca gcatttcatc 2280
gcccagcctg gggtccagaa ttttctttct aagcaatggt atggagagat ttcccgagac 2340
accaagaact ggaagattat cctgtgtctg tttattatac ccttggtggg ctgtggcttt 2400
gtatcattta ggaagaaacc tgtcgacaag cacaagaagc tgctttggta ctatgtggcg 2460
ttcttcacct ccccttcgt ggtcttctcc tggaatgtgg tcttctacat cgccttcctc 2520
ctgctgtttg cctacgtgct gctcatggat ttccattcgg tgccacaccc ccccgagctg 2580
gtcctgtact cgctggtctt tgtcctcttc tgtgatgaag tgagacaggg ccggccggct 2640
gctcccagtg cggggcccgc caagcccacg cccacccgga actccatctg gcccgcaagc 2700
tccacacgca gccccggttc ccgctcacgc cactccttcc acacttccct gcaagctgag 2760
ggtgccagct ctggccttgg ccagcccaga aaggggctcc cacagtgcag cggtgggctg 2820
aagggctcct caagtgccgc caaagtggga gcccaggcag aggaggtgcc gagagcaagc 2880
gagggctgtg aggactgcca gcacgctgtc acctctcaga agcgtaagac agcaatggac 2940
caaacagacg aagatctctt cccctatgga gcattctacc agttcctgat gatttccagg 3000
agctttcgag gagaggagat gagcatcggc aagcagcact aa 3042

<210> 4
<211> 3039
<212> DNA
<213> Homo sapiens

<400> 4
atggttggag gatgcaggtg gacagaagac gtggagcctg cagaagtaaa ggaaaagatg 60
tcctttcggg cagccaggct cagcatgagg aacagaagga atgacactct ggacagcacc 120
cggaccctgt actccagcgc gtctcggagc acagacttgt cttacagtga aagcgacttg 180
gtgaatttta ttcaagcaaa ttttaagaaa cgagaatgtg tcttctttac caaagattcc 240
aaggccacgg agaatgtgtg caagtgtggc tatgcccaga gccagcacat ggaaggcacc 300
cagatcaacc aaagtgagaa atggaactac aagaaacaca ccaaggaatt tcctaccgac 360
gcctttgggg atattcagtt tgagacactg gggaagaaag ggaagtatat acgtctgtcc 420
tgcgacacgg acgcggaaat cctttacgag ctgctgaccc agcactggca cctgaaaaca 480
cccaacctgg tcatttctgt gaccgggggc gccaagaact tcgccctgaa gccgcgcatg 540
cgcaagatct tcagccggct catctacatc gcgcagtcca aaggtgcttg gattctcacg 600
ggaggcaccc attatggcct gatgaagtac ctcggggagg tggtgagaga taacaccatc 660
agcaggagtt cagaggagaa tattgtggcc attggcatag cagcttgggg catggtctcc 720
aaccgggaca ccctcatcag gaattgcgat gctgagggct atttttagc ccagtacctt 780

atggatgact tcacaagaga tccactgtat atcctggaca acaaccacac acatttgctg 840
ctcgtggaca atggctgtca tggacatccc actgtcgaag caaagctccg gaatcagcta 900
gagaagtata tctctgagcg cactattcaa gattccaact atggtggcaa gatccccatt 960
gtgtgttttg cccaaggagg tggaaaagag actttgaaag ccatcaatac ctccatcaaa 1020
aataaaattc cttgtgtggt ggtggaaggc tcgggccaga tcgctgatgt gatcgctagc 1080
ctggtggagg tggaggatgc cctgacatct tctgccgtca aggagaagct ggtgcgcttt 1140
ttaccccgca cggtgtcccg gctgcctgag gaggagactg agagttggat caaatggctc 1200
aaagaaattc tcgaatgttc tcacctatta acagttatta aaatggaaga agctggggat 1260
gaaattgtga gcaatgccat ctcctacgct ctatacaaag ccttcagcac cagtgagcaa 1320
gacaaggata actggaatgg gcagctgaag cttctgctgg agtggaacca gctggactta 1380
gccaatgatg agattttcac caatgaccgc cgatgggaga agagcaaacc gaggctcaga 1440
gacacaataa tccaggtcac atggctggaa aatggtagaa tcaaggttga gagcaaagat 1500
gtgactgacg gcaaagcctc ttctcatatg ctggtggttc tcaagtctgc tgaccttcaa 1560
gaagtcatgt ttacggctct cataaaggac agacccaagt ttgtccgcct ctttctggag 1620
aatggcttga acctacggaa gtttctcacc catgatgtcc tcactgaact cttctccaac 1680
cacttcagca cgcttgtgta ccggaatctg cagatcgcca agaattccta taatgatgcc 1740
ctcctcacgt ttgtctggaa actggttgcg aacttccgaa gaggcttccg gaaggaagac 1800
agaaatggcc gggacgagat ggacatagaa ctccacgacg tgtctcctat tactcggcac 1860
cccctgcaag ctctcttcat ctgggccatt cttcagaata agaaggaact ctccaaagtc 1920
atttgggagc agaccagggg ctgcactctg gcagccctgg gagccagcaa gcttctgaag 1980
actctggcca aagtgaagaa cgacatcaat gctgctgggg agtccgagga gctggctaat 2040
gagtacctga cccgggctgt tggtgagtcc acagtgtgga atgctgtggt gggcgcggat 2100
ctgccatgtg gcacagacat tgccagcggc actcatagac cagatggtgg agagctgttc 2160
actgagtgtt acagcagcga tgaagacttg gcagaacagc tgctggtcta ttcctgtgaa 2220
gcttggggtg gaagcaactg tctggagctg gcggtggagg ccacagacca gcatttcatc 2280
gcccagcctg gggtccagaa ttttctttct aagcaatggt atggagagat ttcccgagac 2340
accaagaact ggaagattat cctgtgtctg tttattatac ccttggtggg ctgtggcttt 2400
gtatcattta ggaagaaacc tgtcgacaag cacaagaagc tgctttggta ctatgtggcg 2460
ttcttcacct ccccccttcgt ggtcttctcc tggaatgtgg tcttctacat cgccttcctc 2520
ctgctgtttg cctacgtgct gctcatggat ttccattcgg tgccacaccc ccccgagctg 2580
gtcctgtact cgctggtctt tgtcctcttc tgtgatgaag tgagacaggg ccggccggct 2640
gctcccagtg cggggcccgc caagcccacg cccacccgga actccatctg gcccgcaagc 2700
tccacacgca gccccggttc ccgctcacgc cactccttcc acacttccct gcaagctgag 2760
ggtgccagct ctggccttgg ccagcccaga aaggggctcc cacagtgcag cggtgggctg 2820
aagggctcct caagtgccgc caaagtggga gcccaggcag aggaggtgcc gagagcaagc 2880
gagggctgtg aggactgcca gcacgctgtc acctctcaga agcgtaagac agcaatggac 2940
caaacagacg aagatctctt cccctatgga gcattctacc agttcctgat gatttccagg 3000
agctttcgag gagaggagat gagcatcggc aagcagcac 3039

<210> 5
<211> 3893
<212> DNA
<213> Homo sapiens

<400> 5
attaaagttt ataaaacagt ggctggatgg ttggaggatg caggtggaca gaagacgtgg 60
agcctgcaga agtaaaggaa aagatgtcct ttcgggcagc caggctcagc atgaggaaca 120
gaaggaatga cactctggac agcacccgga ccctgtactc cagcgcgtct cggagcacag 180
acttgtctta cagtgaaagc gccagcttct acgctgcctt caggacacag acgtgcccaa 240
tcatggcttc ttgggacttg gtgaatttta ttcaagcaaa ttttaagaaa cgagaatgtg 300
tcttctttac caaagattcc aaggccacgg agaatgtgtg caagtgtggc tatgcccaga 360
gccagcacat ggaaggcacc cagatcaacc aaagtgagaa atggaactac aagaaacaca 420
ccaaggaatt tcctaccgac gcctttgggg atattcagtt tgagacactg gggaagaaag 480
ggaagtatat acgtctgtcc tgcgacacgg acgcggaaat cctttacgag ctgctgaccc 540
agcactggca cctgaaaaca cccaacctgg tcatttctgt gaccgggggc gccaagaact 600
tcgccctgaa gccgcgcatg cgcaagatct tcagccggct catctacatc gcgcagtcca 660
aaggtgcttg gattctcacg ggaggcaccc attatggcct gatgaagtac atcggggagg 720
tggtgagaga taacaccatc agcaggagtt cagaggagaa tattgtggcc attggcatag 780
cagcttgggg catggtctcc aaccgggaca ccctcatcag gaattgcgat gctgagggct 840
atttttagc ccagtacctt atggatgact tcacaagaga tccactgtat atcctggaca 900
acaaccacac acatttgctg ctcgtggaca atggctgtca tggacatccc actgtcgaag 960
caaagctccg gaatcagcta gagaagtata tctctgagcg cactattcaa gattccaact 1020
atggtggcaa gatccccatt gtgtgttttg cccaaggagg tggaaaagag actttgaaag 1080
ccatcaatac ctccatcaaa aataaaattc cttgtgtggt ggtggaaggc tcgggccaga 1140
tcgctgatgt gatcgctagc ctggtggagg tggaggatgc cctgacatct tctgccgtca 1200
aggagaagct ggtgcgcttt ttaccccgca cggtgtcccg gctgcctgag gaggagactg 1260
agagttggat caaatggctc aaagaaattc tcgaatgttc tcacctatta acagttatta 1320

aaatggaaga agctggggat gaaattgtga gcaatgccat ctcctacgct ctatacaaag 1380
ccttcagcac cagtgagcaa gacaaggata actggaatgg gcagctgaag cttctgctgg 1440
agtggaacca gctggactta gccaatgatg agattttcac caatgaccgc cgatgggaga 1500
agagcaaacc gaggctcaga gacacaataa tccaggtcac atggctggaa aatggtagaa 1560
tcaaggttga gagcaaagat gtgactgacg gcaaagcctc ttctcatatg ctggtggttc 1620
tcaagtctgc tgaccttcaa gaagtcatgt ttacggctct cataaaggac agacccaagt 1680
ttgtccgcct ctttctggag aatggcttga acctacggaa gtttctcacc catgatgtcc 1740
tcactgaact cttctccaac cacttcagca cgcttgtgta ccggaatctg cagatcgcca 1800
agaattccta taatgatgcc ctcctcacgt ttgtctggaa actggttgcg aacttccgaa 1860
gaggcttccg gaaggaagac agaaatggcc gggacgagat ggacatagaa ctccacgacg 1920
tgtctcctat tactcggcac cccctgcaag ctctcttcat ctgggccatt cttcagaata 1980
agaaggaact ctccaaagtc atttgggagc agaccagggg ctgcactctg gcagccctgg 2040
gagccagcaa gcttctgaag actctggcca aagtgaagaa cgacatcaat gctgctgggg 2100
agtccgagga gctggctaat gagtacgaga cccgggctgt tggtgagtcc acagtgtgga 2160
atgctgtggt gggcgcggat ctgccatgtg gcacagacat tgccagcggc actcatagac 2220
cagatggtgg agagctgttc actgagtgtt acagcagcga tgaagacttg gcagaacagc 2280
tgctggtcta ttcctgtgaa gcttggggtg gaagcaactg tctggagctg gcggtggagg 2340
ccacagacca gcatttcatc gcccagcctg gggtccagaa ttttctttct aagcaatggt 2400
atggagagat ttcccgagac accaagaact ggaagattat cctgtgtctg tttattatac 2460
ccttggtggg ctgtggcttt gtatcattta ggaagaaacc tgtcgacaag cacaagaagc 2520
tgctttggta ctatgtggcg ttcttcacct ccccccttcgt ggtcttctcc tggaatgtgg 2580
tcttctacat cgccttcctc ctgctgtttg cctacgtgct gctcatggat ttccattcgg 2640
tgccacaccc ccccgagctg gtcctgtact cgctggtctt tgtcctcttc tgtgatgaag 2700
tgagacaggg ccggccggct gctcccagtg cggggcccgc caagcccacg cccacccgga 2760
actccatctg gcccgcaagc tccacacgca gccccggttc ccgctcacgc cactccttcc 2820
acacttccct gcaagctgag ggtgccagct ctggccttgg ccagcccaga aaggggtgga 2880
catttaaaaa tctggaaatg gttgatattt ccaagctgct gatgtccctc tctgtccctt 2940
tctgtacgca gtggtacgta aatggggtga attattttac tgacctgtgg aatgtgatgg 3000
acacgctggg gctttttac ttcatagcag gaattgtatt tcggcaaggg atccttaggc 3060
agaatgagca gcgctggagg tggatattcc gttcggtcat ctacgagccc tacctggcca 3120
tgttcggcca ggtgcccagt gacgtggatg gtaccacgta tgactttgcc cactgcacct 3180
tcactgggaa tgagtccaag ccactgtgtg tggagctgga tgagcacaac ctgccccggt 3240
tccccgagtg gatcaccatc cccctggtgt gcatctacat gttatccacc aacatcctgc 3300
tggtcaacct gctggtcgcc atgtttggct acacggtggg caccgtccag gagaacaatg 3360
accaggtctg gaagttccag aggtacttcc tggtgcagga gtactgcagc cgcctcaata 3420
tcccccttccc cttcatcgtc ttcgcttact tctacatggt ggtgaagaag tgcttcaagt 3480
gttgctgcaa ggagaaaaac atggagtctt ctgtctgctg tgagtggttt atccatgtgt 3540
acttgggatc agaagcagcg attaatttca gggaaggatg cctgcatcca gtgattggaa 3600
gctggacccc aggctggctg gtctggacat ccacacgcat tctcacatgc agtgccggct 3660
ggccagcagc agggagtctc agtgtcacca cacatagcag ctgggttcct gcaaaaagca 3720
gcaagtcaca ggcccaccca gacagaacgg gtagagaatg tgactctgct tctgggtggg 3780
aaggacagcc tgcccggtgg gtggaagaat ccgtggccct gtttggccat cgtggccctg 3840
tttggccacc taccactcta ggcatcactg agctgaatgc gccggtcctc tga 3893

<210> 6
<211> 4646
<212> DNA
<213> Homo sapiens

<400> 6
tcgacccacg cgtccgccca cgcgtccgcc cacgcgtccg cccacgcgtc cgcccacgcg 60
tccgcccacg cgtccggggt gaaagmrramy cmygcktsms aaaaaccgtc acttaggaaa 120
agatgtcctt tcgggcagcc aggctcagca tgaggaacag aaggaatgac actctggaca 180
gcacccggac cctgtactcc agcgcgtctc ggagcacaga cttgtcttac agtgaaagcg 240
acttggtgaa ttttattcaa gcaaatttta agaaacgaga atgtgtcttc tttaccaaag 300
attccaaggc cacggagaat gtgtgcaagt gtggctatgc ccagagccag cacatggaag 360
gcacccagat caaccaaagt gagaaatgga actacaagaa acacaccaag gaatttccta 420
ccgacgcctt tggggatatt cagtttgaga cactggggaa gaaagggaag tatatacgtc 480
tgtcctgcga cacggacgcg gaaatccttt acgagctgct gacccagcac tggcacctga 540
aaacacccaa cctggtcatt tctgtgaccg ggggcgccaa gaacttcgcc ctgaagccgc 600
gcatgcgcaa gatcttcagc cggctcatct acatcgcgca gtccaaaggt gcttggattc 660
tcacgggagg cacccattat ggcctgatga agtacatcgg ggaggtggtg agagataaca 720
ccatcagcag gagttcagag gagaatattg tggccattgg catagcagct tggggcatgg 780
tctccaaccg ggacaccctc atcaggaatt gcgatgctga gggctatttt ttagcccagt 840
accttatgga tgacttcaca agagatccac tgtgtatcct ggacaacaac cacacacatt 900
tgctgctcgt ggacaatggc tgtcatggac atcccactgt cgaagcaaag ctccggaatc 960
agctagagaa gtatatctct gagcgcacta ttcaagattc caactatggt ggcaagatcc 1020

ccattgtgtg ttttgcccaa ggaggtggaa aagagacttt gaaagccatc aatacctcca 1080
tcaaaaataa aattccttgt gtggtggtgg aaggctcggg ccagatcgct gatgtgatcg 1140
ctagcctggt ggaggtggag gatgccctga catcttctgc cgtcaaggag aagctggtgc 1200
gctttttacc ccgcacggtg tcccggctgc ctgaggagga gactgagagt tggatcaaat 1260
ggctcaaaga aattctcgaa tgttctcacc tattaacagt tattaaaatg gaagaagctg 1320
gggatgaaat tgtgagcaat gccatctcct acgctctata caaagccttc agcaccagtg 1380
agcaagacaa ggataactgg aatgggcagc tgaagcttct gctggagtgg aaccagctgg 1440
acttagccaa tgatgagatt ttcaccaatg accgccgatg ggagtctgct gaccttcaag 1500
aagtcatgtt tacggctctc ataaaggaca gacccaagtt tgtccgcctc tttctggaga 1560
atggcttgaa cctacggaag tttctcaccc atgatgtcct cactgaactc ttctccaacc 1620
acttcagcac gcttgtgtac cggaatctgc agatcgccaa gaattcctat aatgatgccc 1680
tcctcacgtt tgtctggaaa ctggttgcga acttccgaag aggcttccgg aaggaagaca 1740
gaaatggccg ggacgagatg gacatagaac tccacgacgt gtctcctatt actcggcacc 1800
ccctgcaagc tctcttcatc tgggccattc ttcagaataa gaaggaactc tccaaagtca 1860
tttgggagca gaccaggggc tgcactctgg cagccctggg agccagcaag cttctgaaga 1920
ctctggccaa agtgaagaac gacatcaatg ctgctgggga gtccgaggag ctggctaatg 1980
agtacgagac ccgggctgtt gagctgttca ctgagtgtta cagcagcgat gaagacttgg 2040
cagaacagct gctggtctat tcctgtgaag cttggggtgg aagcaactgt ctggagctgg 2100
cggtggaggc cacagaccag catttcatcg cccagcctgg ggtccagaat tttctttcta 2160
agcaatggta tggagagatt tcccgagaca ccaagaactg gaagattatc ctgtgtctgt 2220
ttattatacc cttggtgggc tgtggctttg tatcatttag gaagaaacct gtcgacaagc 2280
acaagaagct gctttggtac tatgtggcgt tcttcacctc ccccttcgtg gtcttctcct 2340
ggaatgtggt cttctacatc gccttcctcc tgctgtttgc ctacgtgctg ctcatggatt 2400
tccattcggt gccacacccc cccgagctgg tcctgtactc gctggtcttt gtcctcttct 2460
gtgatgaagt gagacagtgg tacgtaaatg gggtgaatta ttttactgac ctgtggaatg 2520
tgatggacac gctggggctt ttttacttca tagcaggaat tgtatttcgg ctccactctt 2580
ctaataaaag ctctttgtat tctggacgag tcatttttctg tctggactac attattttca 2640
ctctaagatt gatccacatt tttactgtaa gcagaaactt aggacccaag attataatgc 2700
tgcagaggat gctgatcgat gtgttcttct tcctgttcct ctttgcggtg tggatggtgg 2760
cctttggcgt ggccaggcaa gggatcctta ggcagaatga gcagcgctgg aggtggatat 2820
tccgttcggt catctacgag ccctacctgg ccatgttcgg ccaggtgccc agtgacgtgg 2880
atggtaccac gtatgacttt gcccactgca ccttcactgg gaatgagtcc aagccactgt 2940
gtgtggagct ggatgagcac aacctgcccc ggttccccga gtggatcacc atccccctgg 3000
tgtgcatcta catgttatcc accaacatcc tgctggtcaa cctgctggtc gccatgtttg 3060
gctacacggt gggcaccgtc caggagaaca atgaccaggt ctggaagttc cagaggtact 3120
tcctggtgca ggagtactgc agccgcctca atatcccctt ccccttcatc gtcttcgctt 3180
acttctacat ggtggtgaag aagtgcttca agtgttgctg caaggagaaa aacatggagt 3240
cttctgtctg ctgtttcaaa aatgaagaca atgagactct ggcatgggag ggtgtcatga 3300
aggaaaacta ccttgtcaag atcaacacaa aagccaacga cacctcagag gaaatgaggc 3360
atcgatttag acaactggat acaaagctta atgatctcaa gggtcttctg aaagagattg 3420
ctaataaaat caaataaaac tgtatgaact ctaatggaga aaaatctaat tatagcaaga 3480
tcatattaag gaatgctgat gaacaatttt gctatcgact actaaatgag agattttcag 3540
acccctgggt acatggtgga tgatttaaa tcaccctagt gtgctgagac cttgagaata 3600
aagtgtgtga ttggtttcat acttgaagac ggatataaag gaagaatatt tcctttatgt 3660
gtttctccag aatggtgcct gtttctctct gtgtctcaat gcctgggact ggaggttgat 3720
agtttaagtg tgttcttacc gcctcctttt tcctttaatc ttatttttga tgaacacata 3780
tataggagaa catctatcct atgaataaga acctggtcat gctttactcc tgtattgtta 3840
ttttgttcat ttccaattga ttctctactt ttccctttt tgtattatgt gactaattag 3900
ttggcatatt gtwaaaagtc tctcaaatta ggccagattc taaaacatgc tgcagcaaga 3960
ggaccccgct ctcttcagga aaagtgtttt catttctcag gatgcttctt acctgtcaga 4020
ggaggtgaca aggcagtctc ttgctctctt ggactcacca ggctcctatt gaaggaacca 4080
ccccattcc taaatatgtg aaaagtcgcc caaaatgcaa ccttgaaagg cactactgac 4140
tttgttctta ttggatactc ctcttattta ttatttttcc attaaaaata atagctggct 4200
attatagaaa atttagacca tacagagatg tagaaagaac ataaattgtc cccattacct 4260
taaggtaatc actgctaaca atttctggat ggtttttcaa gtctattttt tttctatgta 4320
tgtctcaatt ctctttcaaa attttacaga atgttatcat actacatata tacttttttat 4380
gtaagctttt tcacttagta ttttatcaaa tatgttttta ttatattcat agccttctta 4440
aacattatat caataattgc ataataggca acctctagcg attaccataa ttttgctcat 4500
tgaaggctat ctccagttga tcattgggat gagcatcttt gtgcatgaat cctattgctg 4560
tatttgggaa aattttccaa ggttagattc caataaatat ctatttatta ttaaaaaaaa 4620
aaaaaaaagg gcggccgctc tagagt 4646

<210> 7
<211> 3639
<212> DNA
<213> Homo sapiens

<400> 7
gattacgcaa gctatttagg tgacactata gaatwctcag cttgcatcaa gcttggtacc 60
gagctcggat ccctagtaac ggccgccagt gtgctggaat tcgcccttgc agccgggctc 120
agcatgagga acagaaggaa tgacactctg gacagcaccc ggaccctgta ctccagcgcg 180
tctcggagca cagacttgtc ttacagtgaa agcgacttgg tgaattttat tcaagcaaat 240
tttaagaaac gagaatgtgt cttctttacc aaagattcca aggccacgga gaatgtgtgc 300
aagtgtggct atgcccagag ccagcacatg gaaggcaccc agatcaacca aagtgagaaa 360
tggaactaca agaaacacac caaggaattt cctaccgacg cctttgggga tattcagttt 420
gagacactgg ggaagaaagg gaagtatata cgtctgtcct gcgacacgga cgcggaaatc 480
ctttacgagc tgctgaccca gcactggcac ctgaaaacac ccaacctggt catttctgtg 540
accgggggcg ccaagaactt cgccctgaag ccgcgcatgc gcaagatctt cagccggctc 600
atctacatcg cgcagtccaa aggtgcttgg attctcacgg gaggcaccca ttatggcctg 660
atgaagtaca tcggggaggt ggtgagagat aacaccatca gcaggagttc agaggagaat 720
attgtggcca ttggcatagc agcttggggc atggtctcca accgggacac cctcatcagg 780
aattgcgatg ctgagggcta ttttttagcc cagtaccttа tggatgactt cacaagagat 840
ccactgtata tcctggacaa caaccacaca catttgctgc tcgtggacaa tggctgtcat 900
ggacatccca ctgtcgaagc aaagctccgg aatcagctag agaagtatat ctctgagcgc 960
actattcaag attccaacta tggtggcaag atccccattg tgtgttttgc ccaaggaggt 1020
ggaaaagaga ctttgaaagc catcaatacc tccatcaaaa ataaaattcc ttgtgtggtg 1080
gtggaaggct cgggccagat cgctgatgtg atcgctagcc tggtggaggt ggaggatgcc 1140
ctgacatctt ctgccgtcaa ggagaagctg gtgcgctttt taccccgcac ggtgtcccgg 1200
ctgcctgagg aggagactga gagttggatc aaatggctca aagaaattct cgaatgttct 1260
cacctattaa cagttattaa aatggaagaa gctggggatg aaattgtgag caatgccatc 1320
tcctacgctc tatacaaagc cttcagcacc agtgagcaag acaaggataa ctggaatggg 1380
cagctgaagc ttctgctgga gtggaaccag ctggacttag ccaatgatga gattttcacc 1440
aatgaccgcc gatgggagtc tgctgacctt caagaagtca tgtttacggc tctcataaag 1500
gacagaccca agtttgtccg cctctttctg gagaatggct tgaacctacg gaagtttctc 1560
acccatgatg tcctcactga actcttctcc aaccacttca gcacgcttgt gtaccggaat 1620
ctgcagatcg ccaagaattc ctataatgat gccctcctca cgtttgtctg gaaactggtt 1680
gcgaacttcc gaagaggctt ccggaaggaa gacagaaatg gccgggacga gatggacata 1740
gaactccacg acgtgtctcc tattactcgg caccccctgc aagctctctt catctgggcc 1800
attcttcaga ataagaagga actctccaaa gtcatttggg agcagaccag gggctgcact 1860
ctggcagccc tgggagccag caagcttctg aagactctgg ccaaagtgaa gaacgacatc 1920
aatgctgctg gggagtccga ggagctggct aatgagtacg agacccgggc tgttgagctg 1980
ttcactgagt gttacagcag cgatgaagac ttggcagaac agctgctggt ctattcctgt 2040
gaagcttggg gtggaagcaa ctgtctggag ctggcggtgg aggccacaga ccagcatttc 2100
atcgcccagc ctggggtcca gaattttctt tctaagcaat ggtatggaga gatttcccga 2160
gacaccaaga actggaagat tatcctgtgt ctgtttatta tacccttggt gggctgtggc 2220
tttgtatcat ttaggaagaa acctgtcgac aagcacaaga agctgctttg gtactatgtg 2280
gcgttcttca cctccccctt cgtggtcttc tcctggaatg tggtcttcta catcgccttc 2340
ctcctgctgt ttgcctacgt gctgctcatg gatttccatt cggtgccaca ccccccgag 2400
ctggtcctgt actcgctggt ctttgtcctc ttctgtgatg aagtgagaca gtggtacgta 2460
aatggggtga attattttac tgacctgtgg aatgtgatgg acacgctggg gcttttttac 2520
ttcatagcag gaattgtatt tcggctccac tcttctaata aaagctcttt gtattctgga 2580
cgagtcattt tctgtctgga ctacattatt ttcactctaa gattgatcca cattttact 2640
gtaagcagaa acttaggacc caagattata atgctgcaga ggatgctgat cgatgtgttc 2700
ttcttcctgt tcctctttgc ggwgtggatg gtggcctttg gcgtggccag gcaagggatc 2760
cttaggcaga atgagcagcg ctggaggtgg atattccgtt cggtcatcta cgagccctac 2820
ctggccatgt tcggccaggt gcccagtgac gtggatggta ccacgtatga ctttgcccac 2880
tgcaccttca ctgggaatga gtccaagcca ctgtgtgtgg agctggatga gcacaacctg 2940
ccccggttcc ccgagtggat caccatcccc ctggtgtgca tctacatgtt atccaccaac 3000
atcctgctgg tcaacctgct ggtcgccatg tttggctaca cggtgggcac cgtccaggag 3060
aacaatgacc aggtctggaa gttccagagg tacttcctgg tgcaggagta ctgcagccgc 3120
ctcaatatcc ccttcccctt catcgtcttc gcttacttct acatggtggt gaagaagtgc 3180
ttcaagtgtt gctgcaagga gaaaaacatg gagtcttctg tctgctgttt caaaaatgaa 3240
gacaatgaga ctctggcatg ggagggtgtc atgaaggaaa actaccttgt caagatcaac 3300
acaaaagcca acgacacctc agaggaaatg aggcatcgat ttagacaact ggatacaaag 3360
cttaatgatc tcaagggtct tctgaaagag attgctaata aaatcaaata aaactgtatg 3420
aactctaatg gagaaaaatc taattatagc aagatcatat taaggaatgc tgatgaacaa 3480
ttttgctatc gactactaaa tgagagattt tcagacccct gggtacatgg tggatgattt 3540
taaatcaccc tagtgtgctg agaccttgag aataaagtgt gaagggcgaa ttctgcagat 3600
atccatcaca ctggcggccg ctcgagcatg catctagag 3639

<210> 8
<211> 3101
<212> DNA
<213> Homo sapiens

<400> 8
atggttggag gatgcaggtg gacagaagac gtggagcctg cagaagtaaa ggaaaagatg 60
tcctttcggg cagccaggct cagcatgagg aacagaagga atgacactct ggacagcacc 120
cggaccctgt actccagcgc gtctcggagc acagacttgt cttacagtga aagcgccagc 180
ttctacgctg ccttcaggac acagacgtgc ccaatcatgg cttcttggga cttggtgaat 240
tttattcaag caaattttaa gaaacgagaa tgtgtcttct ttaccaaaga ttccaaggcc 300
acggagaatg tgtgcaagtg tggctatgcc cagagccagc acatggaagg cacccagatc 360
aaccaaagtg agaaatggaa ctacaagaaa cacaccaagg aatttcctac cgacgccttt 420
ggggatattc agtttgagac actggggaag aaagggaagt atatacgtct gtcctgcgac 480
acggacgcgg aaatccttta cgagctgctg acccagcact ggcacctgaa aacacccaac 540
ctggtcattt ctgtgaccgg gggcgccaag aacttcgccc tgaagccgcg catgcgcaag 600
atcttcagcc ggctcatcta catcgcgcag tccaaaggtg cttggattct cacgggaggc 660
acccattatg gcctgatgaa gtacatcggg gaggtggtga gagataacac catcagcagg 720
agttcagagg agaatattgt ggccattggc atagcagctt ggggcatggt ctccaaccgg 780
gacaccctca tcaggaattg cgatgctgag ggctattttt tagcccagta ccttatggat 840
gacttcacaa gagatccact gtatatcctg gacaacaacc acacacattt gctgctcgtg 900
gacaatggct gtcatggaca tcccactgtc gaagcaaagc tccggaatca gctagagaag 960
tatatctctg agcgcactat tcaagattcc aactatggtg gcaagatccc cattgtgtgt 1020
tttgcccaag gaggtggaaa agagactttg aaagccatca atacctccat caaaaataaa 1080
attccttgtg tggtggtgga aggctcgggc cagatcgctg atgtgatcgc tagcctggtg 1140
gaggtggagg atgccctgac atcttctgcc gtcaaggaga agctggtgcg ctttttaccc 1200
cgcacggtgt cccggctgcc tgaggaggag actgagagtt ggatcaaatg gctcaaagaa 1260
attctcgaat gttctcacct attaacagtt attaaaatgg aagaagctgg ggatgaaatt 1320
gtgagcaatg ccatctccta cgctctatac aaagccttca gcaccagtga gcaagacaag 1380
gataactgga atgggcagct gaagcttctg ctggagtgga accagctgga cttagccaat 1440
gatgagattt tcaccaatga ccgccgatgg gagaagagca aaccgaggct cagagacaca 1500
ataatccagg tcacatggct ggaaaatggt agaatcaagg ttgagagcaa agatgtgact 1560
gacggcaaag cctcttctca tatgctggtg gttctcaagt ctgctgacct tcaagaagtc 1620
atgtttacgg ctctcataaa ggacagaccc aagtttgtcc gcctctttct ggagaatggc 1680
ttgaacctac ggaagtttct cacccatgat gtcctcactg aactcttctc caaccacttc 1740
agcacgcttg tgtaccggaa tctgcagatc gccaagaatt cctataatga tgccctcctc 1800
acgtttgtct ggaaactggt tgcgaacttc cgaagaggct tccggaagga agacagaaat 1860
ggccgggacg agatggacat agaactccac gacgtgtctc ctattactcg gcacccccctg 1920
caagctctct tcatctgggc cattcttcag aataagaagg aactctccaa agtcatttgg 1980
gagcagacca ggggctgcac tctggcagcc ctgggagcca gcaagcttct gaagactctg 2040
gccaaagtga agaacgacat caatgctgct ggggagtccg aggagctggc taatgagtac 2100
gagacccggg ctgttggtga gtccacagtg tggaatgctg tggtgggcgc ggatctgcca 2160
tgtggcacag acattgccag cggcactcat agaccagatg gtggagagct gttcactgag 2220
tgttacagca gcgatgaaga cttggcagaa cagctgctgg tctattcctg tgaagcttgg 2280
ggtggaagca actgtctgga gctggcggtg gaggccacag accagcattt catcgcccag 2340
cctggggtcc agaattttct ttctaagcaa tggtatggag agatttcccg agacaccaag 2400
aactggaaga ttatcctgtg tctgtttatt ataccttgg tgggctgtgg ctttgtatca 2460
tttaggaaga aacctgtcga caagcacaag aagctgcttt ggtactatgt ggcgttcttc 2520
acctcccccct tcgtggtctt ctcctggaat gtggtcttct acatcgcctt cctcctgctg 2580
tttgcctacg tgctgctcat ggatttccat tcggtgccac acccccccga gctggtcctg 2640
tactcgctgg tctttgtcct cttctgtgat gaagtgagac agggccggcc ggctgctccc 2700
agtgcggggc ccgccaagcc cacgcccacc cggaactcca tctggcccgc aagctccaca 2760
cgcagccccg gttcccgctc acgccactcc ttccacactt ccctgcaagc tgagggtgcc 2820
agctctggcc ttggccagcc cagaaagggg ctcccacagt gcagcggtgg gctgaagggg 2880
ctcctcaagt gcggccaaag tgggagccca ggcagaggac gcgcccagag tgagcgaggg 2940
ctgtgaggac tgccagcaag cacgctgtca cctctcagaa gcgtaagaca gcaatggacc 3000
aaacagacga agatctcttc ccctatggag cattctacca gttcctgatg atttccagga 3060
gctttcgagg agaggagatg agcatcggca agcagcacta a 3101

<210> 9
<211> 930
<212> DNA
<213> Homo sapiens

<400> 9
ggcacgaggc tgcctttctc caccagagac tcttcctcag ggaggacttg gtgaatttta 60
ttcaagcaaa ttttaagaaa cgagaatgtg tcttctttac caaagattcc aaggccacgc 120
tcaatgaaat ccttccttcc tgtccacacc atcgtgctta tcagggagaa tgtgtgcaag 180
tgtggctatg cccagagcca gcacatggaa ggcacccaga tcaaccaaag tgagaaatgg 240
aactacaaga aacacaccaa ggaatttcct accgacgcct ttggggatat tcagtttgag 300
acactgggga agaaagggaa gtatatacgt ctgtcctgcg acacggacgc ggaaatcctt 360

tacgagctgc tgacccagca ctggcacctg aaaacaccca acctggtcat ttctgtgacc 420
gggggcgcca agaacttcgc cctgaagccg cgcatgcgca agatcttcag ccggctcatc 480
tacatcgcgc agtccaaagg tgcttggatt ctcacgggag gcacccatta tggcctgatg 540
aagtacatcg gggaggtggt gagagataac accatcagca ggagttcaga ggagaatatt 600
gtggccattg gcatagcagc ttggggcatg gtctccaacc gggacaccct catcaggaat 660
tgcgatgctg aggtaccggt gggacaggag gaggtctgct aggtcacatg gaagaaagac 720
catggcatgg gcctgtggcc tgaaccctgg ggctctgtga tggagccagc cagatcatgg 780
ggaagtctgc ctttcaagga gtgcctttgg gaccttaaag gaattgaaaa caaggatgac 840
gtacctaatt aactgctggg aaagagttaa caatgaatgt tttgttcatt aaaatgtgtt 900
ctcagcaatc tcaaaaaaaa aaaaaaaaaa 930

<210> 10
<211> 3288
<212> DNA
<213> Homo sapiens

<400> 10
atgaggaaca gaaggaatga cactctggac agcacccgga ccctgtactc cagcgcgtct 60
cggagcacag acttgtctta cagtgaaagc gacttggtga attttattca agcaaatttt 120
aagaaacgag aatgtgtctt ctttaccaaa gattccaagg ccacggagaa tgtgtgcaag 180
tgtggctatg cccagagcca gcacatggaa ggcacccaga tcaaccaaag tgagaaatgg 240
aactacaaga aacacaccaa ggaatttcct accgacgcct ttggggatat tcagtttgag 300
acactgggga agaaagggaa gtatatacgt ctgtcctgcg acacggacgc ggaaatcctt 360
tacgagctgc tgacccagca ctggcacctg aaaacaccca acctggtcat ttctgtgacc 420
gggggcgcca agaacttcgc cctgaagccg cgcatgcgca agatcttcag ccggctcatc 480
tacatcgcgc agtccaaagg tgcttggatt ctcacgggag gcacccatta tggcctgatg 540
aagtacatcg gggaggtggt gagagataac accatcagca ggagttcaga ggagaatatt 600
gtggccattg gcatagcagc ttggggcatg gtctccaacc gggacaccct catcaggaat 660
tgcgatgctg agggctattt tttagcccag taccttatgg atgacttcac aagagatcca 720
ctctatatcc tggacaacaa ccacacacat ttgctgctcg tggacaatgg ctgtcatgga 780
catcccactg tcgaagcaaa gctccggaat cagctagaga agtatatctc tgagcgcact 840
attcaagatt ccaactatgg tggcaagatc cccattgtgt gttttgccca aggaggtgga 900
aaagagactt tgaaagccat caatacctcc atcaaaaata aaattccttg tgtggtggtg 960
gaaggctcgg gccagatcgc tgatgtgatc gctagcctgg tggaggtgga ggatgccctg 1020
acatcttctg ccgtcaagga gaagctggtg cgcttttttac cccgcacggt gtcccggctg 1080
cctgaggagg agactgagag ttggatcaaa tggctcaaag aaattctcga atgttctcac 1140
ctattaacag ttattaaaat ggaagaagct ggggatgaaa ttgtgagcaa tgccatctcc 1200
tacgctctat acaaagcctt cagcaccagt gagcaagaca aggataactg gaatgggcag 1260
ctgaagcttc tgctggagtg gaaccagctg gacttagcca atgatgagat tttcaccaat 1320
gaccgccgat gggagtctgc tgaccttcaa gaagtcatgt ttacggctct cataaaggac 1380
agacccaagt ttgtccgcct ctttctggag aatggcttga acctacggaa gtttctcacc 1440
catgatgtcc tcactgaact cttctccaac cacttcagca cgcttgtgta ccggaatctg 1500
cagatcgcca agaattccta taatgatgcc ctcctcacgt ttgtctggaa actggttgcg 1560
aacttccgaa gaggcttccg gaaggaagac agaaatggcc gggacgagat ggacatagaa 1620
ctccacgacg tgtctcctat tactcggcac cccctgcaag ctctcttcat ctgggccatt 1680
cttcagaata agaaggaact ctccaaagtc atttgggagc agaccagggg ctgcactctg 1740
gcagccctgg gagccagcaa gcttctgaag actctggcca aagtgaagaa cgacatcaat 1800
gctgctgggg agtccgagga gctggctaat gagtacgaga cccgggctgt tgagctgttc 1860
actgagtgtt acagcagcga tgaagacttg gcagaacagc tgctggtcta ttcctgtgaa 1920
gcttggggtg gaagcaactg tctggagctg gcggtggagg ccacagacca gcatttcatc 1980
gcccagcctg gggtccagaa ttttctttct aagcaatggt atggagagat ttcccgagac 2040
accaagaacc ggaagattat cctgtgtctg tttattatac ccttggtggg ctgtggcttt 2100
gtatcattta ggaagaaacc tgtcgacaag cacaagaagc tgctttggta ctatgtggcg 2160
ttcttcacct ccccttcgt ggtcttctcc tggaatgtgg tcttctacat cgccttcctc 2220
ctgctgtttg cctacgtgct gctcatggat ttccattcgg tgccacaccc ccccgagctg 2280
gtcctgtact cgctggtctt tgtcctcttc tgtgatgaag tgagacagtg gtacgtaaat 2340
ggggtgaatt attttactga cctgtggaat gtgatggaca cgctggggct tttttacttc 2400
atagcaggaa ttgtatttcg gctccactct tctaataaaa gctctttgta ttctggacga 2460
gtcatttttct gtctggacta cattattttc actctaagat tgatccacat ttttactgta 2520
agcagaaact taggacccaa gattataatg ctgcagagga tgctgatcga tgtgttcttc 2580
ttcctgttcc tctttgcggt gtggatggtg gcctttggcg tggccaggca agggatcctt 2640
aggcagaatg agcagcgctg gaggtggata ttccgttcgg tcatctacga gccctacctg 2700
gccatgttcg gccaggtgcc cagtgacgtg gatggtacca cgtatgactt tgcccactgc 2760
accttcactg ggaatgagtc caagccactg tgtgtggagc tggatgagca caacctgccc 2820
cggttccccg agtggatcac catccccctg gtgtgcatct acatgttatc caccaacatc 2880
ctgctggtca acctgctggt cgccatgttt ggctacacgg tgggcaccgt ccaggagaac 2940
aatgaccagg tctggaagtt ccagaggtac ttcctggtgc aggagtactg cagccgcctc 3000

aatatcccct tccccttcat cgtcttcgct tacttctaca tggtggtgaa gaagtgcttc 3060
aagtgttgct gcaaggagaa aaacatggag tcttctgtct gctgtttcaa aaatgaagac 3120
aatgagactc tggcatggga gggtgtcatg aaggaaaact accttgtcaa gatcaacaca 3180
aaagccaacg acacctcaga ggaaatgagg catcgattta gacaactgga tacaaagctt 3240
aatgatctca agggtcttct gaaagagatt gctaataaaa tcaaataa 3288

<210> 11
<211> 5674
<212> DNA
<213> Homo sapiens

<400> 11
aagaaaatcc tgcttgacaa aaaccgtcac ttaggaaaag atgtcctttc gggcagccag 60
gctcagcatg aggaacagaa ggaatgacac tctggacagc acccggaccc tgtactccag 120
cgcgtctcgg agcacagact tgtcttacag tgaaagcgac ttggtgaatt ttattcaagc 180
aaattttaag aaacgagaat gtgtcttctt tatcaaagat tccaaggcca cggagaatgt 240
gtgcaagtgt ggctatgccc agagccagca catggaaggc acccagatca accaaagtga 300
gaaatggaac tacaagaaac acaccaagga atttcctacc gacgcctttg gggatattca 360
gtttgagaca ctggggaaga aagggaagta tatacgtctg tcctgcgaca cggacgcgga 420
aatcctttac gagctgctga cccagcactg gcacctgaaa acacccaacc tggtcatttc 480
tgtgaccggg ggcgccaaga acttcgccct gaagccgcgc atgcgcaaga tcttcagccg 540
gctcatctac atcgcgcagt ccaaaggtgc ttggattctc acgggaggca cccattatgg 600
cctgatgaag tacatcgggg aggtggtgag agataacacc atcagcagga gttcagagga 660
gaatattgtg gccattggca tagcagcttg gggcatggtc tccaaccggg acaccctcat 720
caggaattgc gatgctgagg gctatttttt agcccagtac cttatggatg acttcacaag 780
agatccactg tatatcctgg acaacaacca cacacatttg ctgctcgtgg acaatggctg 840
tcatggacat cccactgtcg aagcaaagct ccggaatcag ctagagaagt atatctctga 900
gcgcactatt caagattcca actatggtgg caagatcccc attgtgtgtt ttgcccaagg 960
aggtggaaaa gagactttga aagccatcaa tacctccatc aaaaataaaa ttccttgtgt 1020
ggtggtggaa ggctcgggcc agatcgctga tgtgatcgct agcctggtgg aggtggagga 1080
tgccctgaca tctttctgccg tcaaggagaa gctggtgcgc tttttacccc gcacggtgtc 1140
ccggctgcct gaggaggaga ctgagagttg gatcaaatgg ctcaaagaaa ttctcgaatg 1200
ttctcaccta ttaacagtta ttaaaatgga agaagctggg gatgaaattg tgagcaatgc 1260
catctcctac gctctataca aagccttcag caccagtgag caagacaagg ataactggaa 1320
tgggcagctg aagcttctgc tggagtggaa ccagctggac ttagccaatg atgagatttt 1380
caccaatgac cgccgatggg agtctgctga ccttcaagaa gtcatgttta cggctctcat 1440
aaaggacaga cccaagtttg tccgcctctt tctggagaat ggcttgaacc tacggaagtt 1500
tctcacccat gatgtcctca ctgaactctt ctccaaccac ttcagcacgc ttgtgtaccg 1560
gaatctgcag atcgccaaga attcctataa tgatgccctc ctcacgtttg tctggaaact 1620
ggttgcgaac ttccgaagag gcttccggaa ggaagacaga aatggccggg acgagatgga 1680
catagaactc cacgacgtgt ctcctattac tcggcacccc ctgcaagctc tcttcatctg 1740
ggccattctt cagaataaga aggaactctc caaagtcatt tgggagcaga ccaggggctg 1800
cactctggca gccctgggag ccagcaagct tctgaagact ctggccaaag tgaagaacga 1860
catcaatgct gctggggagt ccgaggagct ggctaatgag tacgagaccc gggctgttga 1920
gctgttcact gagtgttaca gcagcgatga agacttggca gaacagctgc tggtctattc 1980
ctgtgaagct tggggtggaa gcaactgtct ggagctggcg gtggaggcca cagaccagca 2040
tttcatcgcc cagcctgggg tccagaattt tctttctaag caatggtatg gagagatttc 2100
ccgagacacc aagaactgga agattatcct gtgtctgttt attataccct tggtgggctg 2160
tggctttgta tcatttagga agaaacctgt cgacaagcac aagaagctgc tttggtacta 2220
tgtggcgttc ttcacctccc ccttcgtggt cttctcctgg aatgtggtct tctacatcgc 2280
cttcctcctg ctgtttgcct acgtgctgct catggatttc cattcggtgc cacacccccc 2340
cgagctggtc ctgtactcgc tggtctttgt cctcttctgt gatgaagtga gacagtggta 2400
cgtaaatggg gtgaattatt ttactgacct gtggaatgtg atggacacgc tggggctttt 2460
ttacttcata gcaggaattg tatttcggct ccactcttct aataaaagct ctttgtattc 2520
tggacgagtc attttctgtc tggactacat tattttcact ctaagattga tccacatttt 2580
tactgtaagc agaaacttag gacccaagat tataatgctg cagaggatgc tgatcgatgt 2640
gttcttcttc ctgttcctct ttgcggtgtg gatggtggcc tttggcgtgg ccaggcaagg 2700
gatccttagg cagaatgagc agcgctggag gtggatattc cgttcggtca tctacgagcc 2760
ctacctggcc atgttcggcc aggtgcccag tgacgtggat ggtaccacgt atgactttgc 2820
ccactgcacc ttcactggga atgagtccaa gccactgtgt gtggagctgg atgagcacaa 2880
cctgccccgg ttccccgagt ggatcaccat ccccctggtg tgcatctaca tgttatccac 2940
caacatcctg ctggtcaacc tgctggtcgc catgtttggc tacacggtgg gcaccgtcca 3000
ggagaacaat gaccaggtct ggaagttcca gaggtacttc ctggtgcagg agtactgcag 3060
ccgcctcaat atccccttcc ccttcatcgt cttcgcttac ttctacatgg tggtgaagaa 3120
gtgcttcaag tgttgctgca aggagaaaaa catggagtct tctgtctgct gtttcaaaaa 3180
tgaagacaat gagactctgg catgggaggg tgtcatgaag gaaaactacc ttgtcaagat 3240
caacacaaaa gccaacgaca cctcagagga aatgaggcat cgatttagac aactggatac 3300

aaagcttaat gatctcaagg gtcttctgaa agagattgct aataaaatca aataaaatca 3360
aataaaactg tatgaaactc taatggagaa aaatctaatt atagcaagat catattaagg 3420
aatgctgatg aacaattttg ctatcgacta ctaaatgaga gattttcaga cccctgggta 3480
catggtggat gattttaaat caccctagtg tgctgagacc ttgagaataa agtgtgtgat 3540
tggtttcata cttgaagacg gatataaagg aagaatattt cctttatgtg tttctccaga 3600
atggtgcctg tttctctctg tgtctcaatg cctgggactg gaggttgata gtttaagtgt 3660
gttcttaccg cctccttttt cctttaatct tatttttgat gaacacatat ataggagaac 3720
atctatccta tgaataagaa cctggtcatg ctttactcct gtattgttat tttgttcatt 3780
tccaattgat tctctacttt tccctttttt gtattatgtg actaattagt tggcatattg 3840
ttaaaagtct ctcaaattag gccagattct aaaacatgct gcagcaagag gaccccgctc 3900
tcttcaggaa aagtgttttc atttctcagg atgcttctta cctgtcagag gaggtgacaa 3960
ggcagtctct tgctctcttg gactcaccag gctcctattg aaggaaccac ccccattcct 4020
aaatatgtga aaagtcgccc aaaatgcaac cttgaaaggc actactgact ttgttcttat 4080
tggatactcc tcttatttat tatttttcca ttaaaaataa tagctggcta ttatagaaaa 4140
tttagaccat acagagatgt agaaagaaca taaattgtcc ccattacctt aaggtaatca 4200
ctgctaacaa tttctggatg gtttttcaag tctatttttt ttctatgtat gtctcaattc 4260
tctttcaaaa ttttacagaa tgttatcata ctacatatat acttttttatg taagctttt 4320
cacttagtat tttatcaaat atgtttttat tatattcata gccttcttaa acattatatc 4380
aataattgca taataggcaa cctctagcga ttaccataat tttgctcatt gaaggctatc 4440
tccagttgat cattgggatg agcatctttg tgcatgaatc ctattgctgt atttgggaaa 4500
attttccaag gttagattcc aataaatatc tatttattat taaatattaa aatatcgatt 4560
tattattaaa accatttata aggctttttc ataaatgtat agcaaatagg aattattaac 4620
ttgagcataa gatatgagat acatgaacct gaactattaa aataaaatat tatatttaac 4680
cctagtttaa gaagaagtca atatgcttat ttaaatatta tggatggtgg gcagatcact 4740
tgaggtcagg agttcgagac cagcctggcc aacatggcaa aaccacatct ctactaaaaa 4800
taaaaaaatt agctgggtgt ggtggtgcac tcctgtaatc ccagctactc agaaggctga 4860
ggtacaagaa ttgctggaac ctgggaggcg gaggttgcag tgaaccaaga ttgcaccact 4920
gcactccagc cggggtgaca gagtgagact ccgactgaaa ataaataaat aaataaataa 4980
ataaataaat aaataaatat tatggatggt gaagggaatg gtatagaatt ggagagatta 5040
tcttactgaa cacctgtagt cccagctttc tctggaagtg gtggtatttg agcaggatgt 5100
gcacaaggca attgaaatgc ccataattag tttctcagct ttgaatacac tataaactca 5160
gtggctgaag gaggaaattt tagaaggaag ctactaaaag atctaatttg aaaaactaca 5220
aaagcattaa ctaaaaaagt ttatttttcct tttgtctggg cagtagtgaa aataactact 5280
cacaacattc actatgtttg caaggaatta acacaaataa aagatgcctt tttacttaaa 5340
cgccaagaca gaaaacttgc ccaatactga gaagcaactt gcattagaga gggaactgtt 5400
aaatgttttc aacccagttc atctggtgga tgtttttgca ggttactctg agaattttgc 5460
ttatgaaaaa tcattatttt tagtgtagtt cacaataatg tattgaacat acttctaatc 5520
aaaggtgcta tgtccttgtg tatggtacta aatgtgtcct gtgtactttt gcacaactga 5580
gaatcctgcg gcttggttta atgagtgtgt tcatgaaata aataatggag gaattgtcaa 5640
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 5674

<210> 12
<211> 1095
<212> PRT
<213> Homo sapiens

<400> 12
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
1 5 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
100 105 110

```
Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
        115                 120                 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
    130                 135                 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145                 150                 155                 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
                165                 170                 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
            180                 185                 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
        195                 200                 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
    210                 215                 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225                 230                 235                 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
                245                 250                 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
            260                 265                 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
        275                 280                 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
    290                 295                 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305                 310                 315                 320

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
                325                 330                 335

Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
            340                 345                 350

Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp
        355                 360                 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
    370                 375                 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385                 390                 395                 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
                405                 410                 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
            420                 425                 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
        435                 440                 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
    450                 455                 460
```

```
Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465                 470                 475                 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
                485                 490                 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
            500                 505                 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
        515                 520                 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
    530                 535                 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545                 550                 555                 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
                565                 570                 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
            580                 585                 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
        595                 600                 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
    610                 615                 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625                 630                 635                 640

Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp
                645                 650                 655

Gln His Phe Ile Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln
            660                 665                 670

Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Arg Lys Ile Ile Leu
        675                 680                 685

Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg
    690                 695                 700

Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala
705                 710                 715                 720

Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr
                725                 730                 735

Ile Ala Phe Leu Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His
            740                 745                 750

Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val
        755                 760                 765

Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr
    770                 775                 780

Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe
785                 790                 795                 800

Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu
                805                 810                 815

Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu
            820                 825                 830
```

Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile
835 840 845

Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu
850 855 860

Phe Ala Val Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu
865 870 875 880

Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr
885 890 895

Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly
900 905 910

Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys
915 920 925

Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu
930 935 940

Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile
945 950 955 960

Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr
965 970 975

Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu
980 985 990

Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val
995 1000 1005

Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys Cys
1010 1015 1020

Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp
1025 1030 1035 1040

Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val
1045 1050 1055

Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg
1060 1065 1070

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys
1075 1080 1085

Glu Ile Ala Asn Lys Ile Lys
1090 1095

<210> 13
<211> 1104
<212> PRT
<213> Homo sapiens

<400> 13
Met Ser Phe Arg Ala Ala Arg Leu Ser Met Arg Asn Arg Arg Asn Asp
1 5 10 15

Thr Leu Asp Ser Thr Arg Thr Leu Tyr Ser Ser Ala Ser Arg Ser Thr
20 25 30

Asp Leu Ser Tyr Ser Glu Ser Asp Leu Val Asn Phe Ile Gln Ala Asn
35 40 45

```
Phe Lys Lys Arg Glu Cys Val Phe Phe Ile Lys Asp Ser Lys Ala Thr
     50                  55                  60

Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser Gln His Met Glu Gly
 65                  70                  75                  80

Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr Lys Lys His Thr Lys
                 85                  90                  95

Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly
            100                 105                 110

Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp Thr Asp Ala Glu Ile
        115                 120                 125

Leu Tyr Glu Leu Leu Thr Gln His Trp His Leu Lys Thr Pro Asn Leu
    130                 135                 140

Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg
145                 150                 155                 160

Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly
                165                 170                 175

Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile
            180                 185                 190

Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn
        195                 200                 205

Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp
    210                 215                 220

Thr Leu Ile Arg Asn Cys Asp Ala Glu Gly Tyr Phe Leu Ala Gln Tyr
225                 230                 235                 240

Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Tyr Ile Leu Asp Asn Asn
                245                 250                 255

His Thr His Leu Leu Leu Val Asp Asn Gly Cys His Gly His Pro Thr
            260                 265                 270

Val Glu Ala Lys Leu Arg Asn Gln Leu Glu Lys Tyr Ile Ser Glu Arg
        275                 280                 285

Thr Ile Gln Asp Ser Asn Tyr Gly Gly Lys Ile Pro Ile Val Cys Phe
    290                 295                 300

Ala Gln Gly Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile
305                 310                 315                 320

Lys Asn Lys Ile Pro Cys Val Val Val Glu Gly Ser Gly Gln Ile Ala
                325                 330                 335

Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp Ala Leu Thr Ser Ser
            340                 345                 350

Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro Arg Thr Val Ser Arg
        355                 360                 365

Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile
    370                 375                 380

Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys Met Glu Glu Ala Gly
385                 390                 395                 400

Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe
                405                 410                 415
```

Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu
420 425 430

Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr
435 440 445

Asn Asp Arg Arg Trp Glu Ser Ala Asp Leu Gln Glu Val Met Phe Thr
450 455 460

Ala Leu Ile Lys Asp Arg Pro Lys Phe Val Arg Leu Phe Leu Glu Asn
465 470 475 480

Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu
485 490 495

Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala
500 505 510

Lys Asn Ser Tyr Asn Asp Ala Leu Leu Thr Phe Val Trp Lys Leu Val
515 520 525

Ala Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp
530 535 540

Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro
545 550 555 560

Leu Gln Ala Leu Phe Ile Trp Ala Ile Leu Gln Asn Lys Lys Glu Leu
565 570 575

Ser Lys Val Ile Trp Glu Gln Thr Arg Gly Cys Thr Leu Ala Ala Leu
580 585 590

Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile
595 600 605

Asn Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg
610 615 620

Ala Val Glu Leu Phe Thr Glu Cys Tyr Ser Ser Asp Glu Asp Leu Ala
625 630 635 640

Glu Gln Leu Leu Val Tyr Ser Cys Glu Ala Trp Gly Gly Ser Asn Cys
645 650 655

Leu Glu Leu Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro
660 665 670

Gly Val Gln Asn Phe Leu Ser Lys Gln Trp Tyr Gly Glu Ile Ser Arg
675 680 685

Asp Thr Lys Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu
690 695 700

Val Gly Cys Gly Phe Val Ser Phe Arg Lys Lys Pro Val Asp Lys His
705 710 715 720

Lys Lys Leu Leu Trp Tyr Tyr Val Ala Phe Phe Thr Ser Pro Phe Val
725 730 735

Val Phe Ser Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Leu Phe
740 745 750

Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu
755 760 765

Leu Val Leu Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Val Arg
770 775 780

Gln Trp Tyr Val Asn Gly Val Asn Tyr Phe Thr Asp Leu Trp Asn Val
785 790 795 800

Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg
805 810 815

Leu His Ser Ser Asn Lys Ser Ser Leu Tyr Ser Gly Arg Val Ile Phe
820 825 830

Cys Leu Asp Tyr Ile Ile Phe Thr Leu Arg Leu Ile His Ile Phe Thr
835 840 845

Val Ser Arg Asn Leu Gly Pro Lys Ile Ile Met Leu Gln Arg Met Leu
850 855 860

Ile Asp Val Phe Phe Phe Leu Phe Leu Phe Ala Val Trp Met Val Ala
865 870 875 880

Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln Arg Trp
885 890 895

Arg Trp Ile Phe Arg Ser Val Ile Tyr Glu Pro Tyr Leu Ala Met Phe
900 905 910

Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe Ala His
915 920 925

Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp
930 935 940

Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val
945 950 955 960

Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu Leu Val
965 970 975

Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln
980 985 990

Val Trp Lys Phe Gln Arg Tyr Phe Leu Val Gln Glu Tyr Cys Ser Arg
995 1000 1005

Leu Asn Ile Pro Phe Pro Phe Ile Val Phe Ala Tyr Phe Tyr Met Val
1010 1015 1020

Val Lys Lys Cys Phe Lys Cys Cys Cys Lys Glu Lys Asn Met Glu Ser
1025 1030 1035 1040

Ser Val Cys Cys Phe Lys Asn Glu Asp Asn Glu Thr Leu Ala Trp Glu
1045 1050 1055

Gly Val Met Lys Glu Asn Tyr Leu Val Lys Ile Asn Thr Lys Ala Asn
1060 1065 1070

Asp Thr Ser Glu Glu Met Arg His Arg Phe Arg Gln Leu Asp Thr Lys
1075 1080 1085

Leu Asn Asp Leu Lys Gly Leu Leu Lys Glu Ile Ala Asn Lys Ile Lys
1090 1095 1100

<210> 14
<211> 192
<212> PRT
<213> Homo sapiens

<400> 14
Met Lys Ser Phe Leu Pro Val His Thr Ile Val Leu Ile Arg Glu Asn
1 5 10 15

Val Cys Lys Cys Gly Tyr Ala Gln Ser Gln His Met Glu Gly Thr Gln
20 25 30

Ile Asn Gln Ser Glu Lys Trp Asn Tyr Lys Lys His Thr Lys Glu Phe
35 40 45

Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly Lys Lys
50 55 60

Gly Lys Tyr Ile Arg Leu Ser Cys Asp Thr Asp Ala Glu Ile Leu Tyr
65 70 75 80

Glu Leu Leu Thr Gln His Trp His Leu Lys Thr Pro Asn Leu Val Ile
85 90 95

Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg Met Arg
100 105 110

Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly Ala Trp
115 120 125

Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile Gly Glu
130 135 140

Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn Ile Val
145 150 155 160

Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp Thr Leu
165 170 175

Ile Arg Asn Cys Asp Ala Glu Val Pro Val Gly Gln Glu Glu Val Cys
180 185 190

<210> 15
<211> 1095
<212> PRT
<213> Homo sapiens

<400> 15
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
1 5 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
100 105 110

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
115 120 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
130 135 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145 150 155 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
165 170 175

Tyr Gly Leu Thr Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
180 185 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
195 200 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
210 215 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225 230 235 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
245 250 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
260 265 270

Glu Lys His Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
275 280 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
290 295 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305 310 315 320

Glu Gly Ser Gly Arg Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
325 330 335

Glu Asp Ala Pro Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
340 345 350

Leu Pro Arg Thr Val Ser Arg Leu Ser Glu Glu Glu Thr Glu Ser Trp
355 360 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
370 375 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385 390 395 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
405 410 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
420 425 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
435 440 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
450 455 460

Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465 470 475 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
485 490 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
500 505 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
515 520 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
530 535 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545 550 555 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
565 570 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
580 585 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
595 600 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
610 615 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625 630 635 640

Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp
645 650 655

Gln His Phe Thr Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln
660 665 670

Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Trp Lys Ile Ile Leu
675 680 685

Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg
690 695 700

Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala
705 710 715 720

Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr
725 730 735

Ile Ala Phe Leu Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His
740 745 750

Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val
755 760 765

Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr
770 775 780

Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe
785 790 795 800

Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu
805 810 815

Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu
820 825 830

Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile
835 840 845

Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu
850 855 860

Phe Ala Val Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu
865 870 875 880

Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr
885 890 895

Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly
900 905 910

Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys
915 920 925

Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu
930 935 940

Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile
945 950 955 960

Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr
965 970 975

Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu
980 985 990

Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val
995 1000 1005

Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys Cys
1010 1015 1020

Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp
1025 1030 1035 1040

Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val
1045 1050 1055

Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg
1060 1065 1070

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys
1075 1080 1085

Glu Ile Ala Asn Lys Ile Lys
1090 1095

<210> 16
<211> 1095
<212> PRT
<213> Homo sapiens

<400> 16
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
1 5 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
100 105 110

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
115 120 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
130 135 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145 150 155 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
165 170 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
180 185 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
195 200 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
210 215 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225 230 235 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
245 250 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
260 265 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
275 280 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
290 295 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305 310 315 320

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
325 330 335

Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
340 345 350

Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp
355 360 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
370 375 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385 390 395 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
405 410 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
420 425 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
435 440 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
450 455 460

Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465 470 475 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
485 490 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
500 505 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
515 520 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
530 535 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545 550 555 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
565 570 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
580 585 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
595 600 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
610 615 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625 630 635 640

Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp
645 650 655

Gln His Phe Ile Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln
660 665 670

Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Trp Lys Ile Ile Leu
675 680 685

Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg
690 695 700

Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala
705 710 715 720

Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr
725 730 735

Ile Ala Phe Leu Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His
740 745 750

Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val
755 760 765

Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr
770 775 780

Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe
785 790 795 800

Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu
805 810 815

Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu
820 825 830

Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile
835 840 845

Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu
850 855 860

Phe Ala Xaa Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu
865 870 875 880

Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr
885 890 895

Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly
900 905 910

Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys
915 920 925

Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu
930 935 940

Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile
945 950 955 960

Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr
965 970 975

Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu
980 985 990

Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val
995 1000 1005

Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys Cys
1010 1015 1020

Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp
1025 1030 1035 1040

Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val
1045 1050 1055

Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg
1060 1065 1070

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys
1075 1080 1085

Glu Ile Ala Asn Lys Ile Lys
1090 1095

<210> 17
<211> 652
<212> PRT
<213> Homo sapiens

<400> 17

```
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
 1               5                  10                  15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
            20                  25                  30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
        35                  40                  45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
    50                  55                  60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65                  70                  75                  80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
                85                  90                  95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
            100                 105                 110

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
        115                 120                 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
    130                 135                 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145                 150                 155                 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
                165                 170                 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
            180                 185                 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
        195                 200                 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
    210                 215                 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225                 230                 235                 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
                245                 250                 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
            260                 265                 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
        275                 280                 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
    290                 295                 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305                 310                 315                 320
```

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
325 330 335

Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
340 345 350

Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp
355 360 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
370 375 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385 390 395 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
405 410 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
420 425 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
435 440 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
450 455 460

Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465 470 475 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
485 490 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
500 505 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
515 520 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
530 535 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545 550 555 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
565 570 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
580 585 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
595 600 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
610 615 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625 630 635 640

Ala Trp Gly Gly Leu Glu His His His His His His
645 650

<210> 18
<211> 1095
<212> PRT
<213> Homo sapiens

<400> 18
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
1 5 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
100 105 110

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
115 120 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
130 135 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145 150 155 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
165 170 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
180 185 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
195 200 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
210 215 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225 230 235 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
245 250 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
260 265 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
275 280 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
290 295 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305 310 315 320

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
325 330 335

Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
340 345 350

```
Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp
        355                 360                 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
    370                 375                 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385                 390                 395                 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
                405                 410                 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
            420                 425                 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
        435                 440                 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
    450                 455                 460

Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465                 470                 475                 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
                485                 490                 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
            500                 505                 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
        515                 520                 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
    530                 535                 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545                 550                 555                 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
                565                 570                 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
            580                 585                 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
        595                 600                 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
    610                 615                 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625                 630                 635                 640

Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp
                645                 650                 655

Gln His Phe Ile Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln
            660                 665                 670

Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Trp Lys Ile Ile Leu
        675                 680                 685

Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg
    690                 695                 700

Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala
705                 710                 715                 720
```

Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr
725 730 735

Ile Ala Phe Leu Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His
740 745 750

Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val
755 760 765

Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr
770 775 780

Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe
785 790 795 800

Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu
805 810 815

Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu
820 825 830

Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile
835 840 845

Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu
850 855 860

Phe Ala Xaa Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu
865 870 875 880

Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr
885 890 895

Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly
900 905 910

Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys
915 920 925

Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu
930 935 940

Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile
945 950 955 960

Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr
965 970 975

Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu
980 985 990

Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val
995 1000 1005

Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys Cys
1010 1015 1020

Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp
1025 1030 1035 1040

Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val
1045 1050 1055

Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg
1060 1065 1070

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys
1075 1080 1085

Glu Ile Ala Asn Lys Ile Lys
1090 1095

<210> 19
<211> 652
<212> PRT
<213> Homo sapiens

<400> 19
Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr
1 5 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu
20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe
35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp
85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser
100 105 110

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp
115 120 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys
130 135 140

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile
145 150 155 160

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His
165 170 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile
180 185 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp
195 200 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu
210 215 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro
225 230 235 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn
245 250 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu
260 265 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly
275 280 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu
290 295 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val
305 310 315 320

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val
325 330 335

Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe
340 345 350

Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp
355 360 365

Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val
370 375 380

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser
385 390 395 400

Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn
405 410 415

Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu
420 425 430

Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp
435 440 445

Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe
450 455 460

Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr
465 470 475 480

His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val
485 490 495

Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu
500 505 510

Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys
515 520 525

Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val
530 535 540

Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile
545 550 555 560

Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg
565 570 575

Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu
580 585 590

Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu
595 600 605

Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr
610 615 620

Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu
625 630 635 640

Ala Trp Gly Gly Leu Glu His His His His His His
645 650

<210> 20
<211> 1104
<212> PRT
<213> Homo sapiens

<400> 20
Met Ser Phe Arg Ala Ala Arg Leu Ser Met Arg Asn Arg Arg Asn Asp
1 5 10 15

Thr Leu Asp Ser Thr Arg Thr Leu Tyr Ser Ser Ala Ser Arg Ser Thr
20 25 30

Asp Leu Ser Tyr Ser Glu Ser Asp Leu Val Asn Phe Ile Gln Ala Asn
35 40 45

Phe Lys Lys Arg Glu Cys Val Phe Phe Thr Lys Asp Ser Lys Ala Thr
50 55 60

Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser Gln His Met Glu Gly
65 70 75 80

Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr Lys Lys His Thr Lys
85 90 95

Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly
100 105 110

Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp Thr Asp Ala Glu Ile
115 120 125

Leu Tyr Glu Leu Leu Thr Gln His Trp His Leu Lys Thr Pro Asn Leu
130 135 140

Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg
145 150 155 160

Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly
165 170 175

Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile
180 185 190

Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn
195 200 205

Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp
210 215 220

Thr Leu Ile Arg Asn Cys Asp Ala Glu Gly Tyr Phe Leu Ala Gln Tyr
225 230 235 240

Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Cys Ile Leu Asp Asn Asn
245 250 255

His Thr His Leu Leu Leu Val Asp Asn Gly Cys His Gly His Pro Thr
260 265 270

Val Glu Ala Lys Leu Arg Asn Gln Leu Glu Lys Tyr Ile Ser Glu Arg
275 280 285

Thr Ile Gln Asp Ser Asn Tyr Gly Gly Lys Ile Pro Ile Val Cys Phe
290 295 300

Ala Gln Gly Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile
305 310 315 320

Lys Asn Lys Ile Pro Cys Val Val Val Glu Gly Ser Gly Gln Ile Ala
325 330 335

Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp Ala Leu Thr Ser Ser
340 345 350

Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro Arg Thr Val Ser Arg
355 360 365

Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile
370 375 380

Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys Met Glu Glu Ala Gly
385 390 395 400

Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe
405 410 415

Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu
420 425 430

Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr
435 440 445

Asn Asp Arg Arg Trp Glu Ser Ala Asp Leu Gln Glu Val Met Phe Thr
450 455 460

Ala Leu Ile Lys Asp Arg Pro Lys Phe Val Arg Leu Phe Leu Glu Asn
465 470 475 480

Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu
485 490 495

Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala
500 505 510

Lys Asn Ser Tyr Asn Asp Ala Leu Leu Thr Phe Val Trp Lys Leu Val
515 520 525

Ala Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp
530 535 540

Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro
545 550 555 560

Leu Gln Ala Leu Phe Ile Trp Ala Ile Leu Gln Asn Lys Lys Glu Leu
565 570 575

Ser Lys Val Ile Trp Glu Gln Thr Arg Gly Cys Thr Leu Ala Ala Leu
580 585 590

Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile
595 600 605

Asn Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg
610 615 620

Ala Val Glu Leu Phe Thr Glu Cys Tyr Ser Ser Asp Glu Asp Leu Ala
625 630 635 640

Glu Gln Leu Leu Val Tyr Ser Cys Glu Ala Trp Gly Gly Ser Asn Cys
645 650 655

Leu Glu Leu Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro
660 665 670

Gly Val Gln Asn Phe Leu Ser Lys Gln Trp Tyr Gly Glu Ile Ser Arg
675 680 685

Asp Thr Lys Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu
690 695 700

Val Gly Cys Gly Phe Val Ser Phe Arg Lys Lys Pro Val Asp Lys His
705 710 715 720

Lys Lys Leu Leu Trp Tyr Tyr Val Ala Phe Phe Thr Ser Pro Phe Val
725 730 735

Val Phe Ser Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Leu Phe
740 745 750

Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu
755 760 765

Leu Val Leu Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Val Arg
770 775 780

Gln Trp Tyr Val Asn Gly Val Asn Tyr Phe Thr Asp Leu Trp Asn Val
785 790 795 800

Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg
805 810 815

Leu His Ser Ser Asn Lys Ser Ser Leu Tyr Ser Gly Arg Val Ile Phe
820 825 830

Cys Leu Asp Tyr Ile Ile Phe Thr Leu Arg Leu Ile His Ile Phe Thr
835 840 845

Val Ser Arg Asn Leu Gly Pro Lys Ile Ile Met Leu Gln Arg Met Leu
850 855 860

Ile Asp Val Phe Phe Phe Leu Phe Leu Phe Ala Val Trp Met Val Ala
865 870 875 880

Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln Arg Trp
885 890 895

Arg Trp Ile Phe Arg Ser Val Ile Tyr Glu Pro Tyr Leu Ala Met Phe
900 905 910

Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe Ala His
915 920 925

Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp
930 935 940

Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val
945 950 955 960

Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu Leu Val
965 970 975

Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln
980 985 990

Val Trp Lys Phe Gln Arg Tyr Phe Leu Val Gln Glu Tyr Cys Ser Arg
995 1000 1005

Leu Asn Ile Pro Phe Pro Phe Ile Val Phe Ala Tyr Phe Tyr Met Val
1010 1015 1020

Val Lys Lys Cys Phe Lys Cys Cys Cys Lys Glu Lys Asn Met Glu Ser
1025 1030 1035 1040

Ser Val Cys Cys Phe Lys Asn Glu Asp Asn Glu Thr Leu Ala Trp Glu
1045 1050 1055

Gly Val Met Lys Glu Asn Tyr Leu Val Lys Ile Asn Thr Lys Ala Asn
1060 1065 1070

Asp Thr Ser Glu Glu Met Arg His Arg Phe Arg Gln Leu Asp Thr Lys
1075 1080 1085

Leu Asn Asp Leu Lys Gly Leu Leu Lys Glu Ile Ala Asn Lys Ile Lys
1090 1095 1100

<210> 21
<211> 931
<212> PRT
<213> Homo sapiens

<400> 21
Met Val Gly Gly Cys Arg Trp Thr Glu Asp Val Glu Pro Ala Glu Val
1 5 10 15

Lys Glu Lys Met Ser Phe Arg Ala Ala Arg Leu Ser Met Arg Asn Arg
20 25 30

Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr Ser Ser Ala Ser
35 40 45

Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Ala Ser Phe Tyr Ala Ala
50 55 60

Phe Arg Thr Gln Thr Cys Pro Ile Met Ala Ser Trp Asp Leu Val Asn
65 70 75 80

Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe Thr Lys
85 90 95

Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser
100 105 110

Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr
115 120 125

Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln
130 135 140

Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp
145 150 155 160

Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp His Leu
165 170 175

Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe
180 185 190

Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile
195 200 205

Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly
210 215 220

Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg
225 230 235 240

Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met
245 250 255

Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu Gly Tyr
260 265 270

Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Tyr
275 280 285

Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn Gly Cys
290 295 300

His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu Glu Lys
305 310 315 320

Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly Lys Ile
325 330 335

Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu Lys Ala
340 345 350

Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val Glu Gly
355 360 365

Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp
370 375 380

Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro
385 390 395 400

Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys
405 410 415

Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys
420 425 430

Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala
435 440 445

Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn
450 455 460

Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn
465 470 475 480

Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Lys Ser Lys Pro Arg
485 490 495

Leu Arg Asp Thr Ile Ile Gln Val Thr Trp Leu Glu Asn Gly Arg Ile
500 505 510

Lys Val Glu Ser Lys Asp Val Thr Asp Gly Lys Ala Ser Ser His Met
515 520 525

Leu Val Val Leu Lys Ser Ala Asp Leu Gln Glu Val Met Phe Thr Ala
530 535 540

Leu Ile Lys Asp Arg Pro Lys Phe Val Arg Leu Phe Leu Glu Asn Gly
545 550 555 560

Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu Phe
565 570 575

Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala Lys
580 585 590

Asn Ser Tyr Asn Asp Ala Leu Leu Thr Phe Val Trp Lys Leu Val Ala
595 600 605

Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp Glu
610 615 620

Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro Leu
625 630 635 640

Gln Ala Leu Phe Ile Trp Ala Ile Leu Gln Asn Lys Lys Glu Leu Ser
645 650 655

Lys Val Ile Trp Glu Gln Thr Arg Gly Cys Thr Leu Ala Ala Leu Gly
660 665 670

Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile Asn
675 680 685

Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg Ala
690 695 700

Val Gly Glu Ser Thr Val Trp Asn Ala Val Val Gly Ala Asp Leu Pro
705 710 715 720

Cys Gly Thr Asp Ile Ala Ser Gly Thr His Arg Pro Asp Gly Gly Glu
725 730 735

Leu Phe Thr Glu Cys Tyr Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu
740 745 750

Leu Val Tyr Ser Cys Glu Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu
755 760 765

Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro Gly Val Gln
770 775 780

Asn Phe Leu Ser Lys Gln Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys
785 790 795 800

Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu Val Gly Cys
805 810 815

Gly Phe Val Ser Phe Arg Lys Lys Pro Val Asp Lys His Lys Lys Leu
820 825 830

Leu Trp Tyr Tyr Val Ala Phe Phe Thr Ser Pro Phe Val Val Phe Ser
835 840 845

Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Leu Phe Ala Tyr Val
850 855 860

Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu Leu Val Leu
865 870 875 880

Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Lys Arg Lys Thr Ala
885 890 895

Met Asp Gln Thr Asp Glu Asp Leu Phe Pro Tyr Gly Ala Phe Tyr Gln
900 905 910

Phe Leu Met Ile Ser Arg Ser Phe Arg Gly Glu Glu Met Ser Ile Gly
915 920 925

Lys Gln His
930

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 October 2003 (23.10.2003)

PCT

(10) International Publication Number
WO 2003/087158 A3

(51) International Patent Classification[7]: C07K 14/70, C12Q 1/68, G01N 33/68, C07K 14/705

(21) International Application Number: PCT/EP2003/003713

(22) International Filing Date: 10 April 2003 (10.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/372,899 16 April 2002 (16.04.2002) US
60/375,139 22 April 2002 (22.04.2002) US

(71) Applicant (*for all designated States except US*): **BAYER HEALTHCARE AG** [DE/DE]; 51368 Leverkusen (DE).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **SHIROO, Masahiro** [JP/GB]; 20 Lady Jermy Way, Teversham, Cambridgeshire CB1 5BE (GB). **YAMAMOTO, Noriyuki** [JP/JP]; 6-6-1-3-404, Jingu, Nara-shi, Nara 631-0804 (JP). **HAYASHI, Fumihiko** [JP/JP]; 5-1-3-17-402, Kabutodai, Kizu-cho, Soraku-gun, Kyoto 619-0224 (JP). **FLOECKNER, Johannes** [AT/JP]; 8-9-601, Higashikozu-cho, Tennoji-ku, Osaka-shi, Osaka 543-0021 (JP). **REINEMER, Peter** [DE/DE]; Am Eckbusch 35/48, 42113 Wuppertal (DE). **ENCINAS, Jeffrey** [US/JP]; 464-1-1401, Toroyamacho, Nishikikoji-sagaru, Nishinotoindori, Nakagyo-ku, Kyoto-shi, Kyoto 604-8225 (JP). **WATANABE, Shinichi** [JP/JP]; 6-3-1-504, Jingu, Nara-shi, Nara 631-0804 (JP). **TAJIMI, Masaomi** [JP/JP]; 1-8-17, Sakuragaoka, Seika-cho, Soraku-gun, Kyoto 619-0232 (JP). **KOKUBO, Toshio** [JP/JP]; 3-15-18B, Jingu, Nara-shi, Nara 631-0804 (JP).

(74) Common Representative: **BAYER HEALTHCARE AG**; Law and Patents, Patents and Licensing, 51368 Leverkusen (DE).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report: 10 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REGULATION OF HUMAN TRANSIENT RECEPTOR POTENTIAL CHANNEL

(57) Abstract: Reagents which regulate human transient receptor potential channel and reagents which bind to human transient receptor potential channel gene products can play a role in preventing, ameliorating, or correcting dysfunctions or diseases including, but not limited to, urinary incontinence, overactive bladder, benign prostatic hyperplasia, lower urinary tract syndromes, and CNS disorders.

WO 2003/087158 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/03713

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K14/70 C12Q1/68 G01N33/68 C07K14/705

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G01N C07K C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 03/064602 A (NEUHAUSSER WERNER M ;JULIUS DAVID (US); MCKEMY DAVID D (US); UNIV) 7 August 2003 (2003-08-07) the whole document	1-8
P,X	WO 02/101045 A (IRM LLC ;NOVARTIS AG (CH); GANJU PAMPOSH (GB); BEVAN STUART (GB);) 19 December 2002 (2002-12-19) SEQ ID Nos 8 and 11	1-8
P,X	WO 02/087608 A (BOEHRINGER INGELHEIM PHARMA ;KRESS MICHAELA (DE); HABERBERGER RAIN) 7 November 2002 (2002-11-07) claims	1-8
P,X	WO 02/44210 A (SQUIBB BRISTOL MYERS CO (US)) 6 June 2002 (2002-06-06) claims 17-20,25	1-8

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 February 2004	15. 04. 2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Routledge, B

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/10391 A (CURTIS RORY A J ;MILLENNIUM PHARM INC (US)) 7 February 2002 (2002-02-07) claims 17-26	1-8
X	WO 02/10382 A (WISSENBACH ULRICH) 7 February 2002 (2002-02-07) claim 31 page 17, paragraph 6 - page 19, paragraph 1	1-8
X	WO 02/04520 A (INCYTE GENOMICS INC) 17 January 2002 (2002-01-17) claims 19,20,22,23,25-27	1-8
X	WO 02/02633 A (INCYTE GENOMICS INC ;TRIBOULEY CATHERINE M (US); RAUMANN BRIGITTE) 10 January 2002 (2002-01-10) claims 19,20,22,23,25-27	1-8
X	WO 02/00722 A (SILOS SANTIAGO INMACULADA ;CURTIS RORY A J (US); MILLENNIUM PHARM) 3 January 2002 (2002-01-03) Seq ID No.5claim 2 page 137 - page 140	1-8
X	WO 02/00718 A (SILOS SANTIAGO INMACULADA ;CURTIS RORY A J (US); MILLENNIUM PHARM) 3 January 2002 (2002-01-03) claims 17-35 page 2, line 34 - page 3, line 3 page 4, line 1 - line 29	1-8
X	WO 01/077331 A (MILLENIUM PHARMACEUTICALS INC ;SILOS SANTIAGO INMACULADA (US); CUR) 18 October 2001 (2001-10-18) claims 10-22,28-30 page 3, line 15 - line 25 page 7, line 1 - line 19 page 8, line 17 - line 23	1-8
X	WO 01/068698 A (BOEHRINGER INGELHEIM) 20 September 2001 (2001-09-20) claims 43-57,68 page 28, line 25 - page 34, line 34	1-8
X	WO 01/062794 A (LORA JOSE M ;CURTIS RORY A J (US); GLUCKSMANN MARIA ALEXANDRA (US)) 30 August 2001 (2001-08-30) claims 17-30,37,38 page 7, line 10 - line 21 page 12, line 17 - line 25 page 13, line 11 - line 16	1-8

-/--

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/03713

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/046258 A (INCYTE GENOMICS INC ;AZIMZAI YALDA (US); KHAN FARRAH A (US); REDDY) 28 June 2001 (2001-06-28) claims 19,20,22,23,25-27	1-8
X	WO 00/40614 A (BETH ISRAEL HOSPITAL ;SCHARENBERG ANDREW M (US)) 13 July 2000 (2000-07-13) claims 24,36,37	1-8
X	WO 00/04929 A (UNIV SOUTH ALABAMA) 3 February 2000 (2000-02-03) page 7, line 6 - line 12 page 15, line 12 - line 26	1-8
X	WO 99/09140 A (BRAKE ANTHONY (US); JULIUS DAVID (US); UNIV.CALIFORNIA(US); CATERINA M) 25 February 1999 (1999-02-25) claim 19	1-8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 03/03713

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1-8
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-8 (partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-8

Given the breadth of the independent claims due to the definitions of the sequences which includes sequences of anything from 26% identity upwards, the initial phase of the search revealed a very large number of documents relevant to the issue of novelty. So many documents were retrieved that it is impossible to determine which parts of the claim(s) may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claim(s) is impossible. Consequently, the search has been restricted to methods of screening using SEQ ID No.12.

Present claims 1-4 relate to an extremely large number of possible methods. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is not to be found, as the description merely represents a theoretical approach and does not exemplify the invention in practice. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely methods of screening using SEQ ID No.12.

Present claims 5-8 relate to a reagent and uses therefof defined by reference to a desirable characteristic or property, namely that the reagewnt has been identified using the screening methods of claims 1-4.

The claims cover all reagents having this characteristic or property, including known compounds (page 38 line 25) whereas the application provides does not provide support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for a single reagent as no specific reagents are identified. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product/compound/method/apparatus by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the use of SEQ ID No.12.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Other documents relating to disclosure concerning transient receptor potential channels have also been added to the search report in order to illustrate the state of the art. However the list is not exhaustive and further documents may become relevant when the subject matter of the claims has been amended to overcome the above objections.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8 (partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.12 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

2. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.13 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

3. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.14 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

4. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.15 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

5. claims: 1-8 (partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.16 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

6. claims: 1-8 (partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.17 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

7. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.18 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

8. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.19 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

9. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.20 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

10. claims: 1-8(partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.21 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

---

11. claims: 1-8 (partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.1 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

12. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.2 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

13. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.3 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

14. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.4 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

15. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.5 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

16. claims: 1-8(partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.6 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

17. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.7 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

18. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.8 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

19. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.9 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

20. claims: 1-18(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.10 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

---

21. claims: 1-8 (partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.11 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 03/03713

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03064602 A	07-08-2003	WO 03064602 A2	07-08-2003
		US 2003219834 A1	27-11-2003
WO 02101045 A	19-12-2002	CA 2450113 A1	19-12-2002
		WO 02101045 A2	19-12-2002
		EP 1399558 A2	24-03-2004
		US 2003157633 A1	21-08-2003
WO 02087608 A	07-11-2002	DE 10120834 A1	07-11-2002
		WO 02087608 A1	07-11-2002
WO 0244210 A	06-06-2002	AU 3245602 A	11-06-2002
		CA 2436941 A1	06-06-2002
		EP 1379652 A2	14-01-2004
		US 2003027164 A1	06-02-2003
		WO 0244210 A2	06-06-2002
WO 0210391 A	07-02-2002	AU 8096901 A	13-02-2002
		EP 1307555 A2	07-05-2003
		WO 0210391 A2	07-02-2002
		US 2004058355 A1	25-03-2004
		US 2002081658 A1	27-06-2002
WO 0210382 A	07-02-2002	AU 8763901 A	13-02-2002
		CA 2417671 A1	07-02-2002
		WO 0210382 A2	07-02-2002
		EP 1366158 A2	03-12-2003
		JP 2004505617 T	26-02-2004
WO 0204520 A	17-01-2002	AU 7323901 A	21-01-2002
		CA 2415808 A1	17-01-2002
		EP 1313854 A2	28-05-2003
		WO 0204520 A2	17-01-2002
WO 0202633 A	10-01-2002	AU 6500201 A	11-12-2001
		AU 7306901 A	14-01-2002
		CA 2410084 A1	06-12-2001
		CA 2413128 A1	10-01-2002
		EP 1320548 A2	25-06-2003
		EP 1297014 A2	02-04-2003
		WO 0192304 A3	06-03-2003
		WO 0202633 A2	10-01-2002
WO 0200722 A	03-01-2002	AU 7024001 A	08-01-2002
		EP 1294762 A2	26-03-2003
		WO 0200722 A2	03-01-2002
		US 2003219806 A1	27-11-2003
		US 2002156253 A1	24-10-2002
WO 0200718 A	03-01-2002	AU 7145501 A	08-01-2002
		EP 1307488 A2	07-05-2003
		WO 0200718 A2	03-01-2002
		US 2002127671 A1	12-09-2002
WO 0177331 A	18-10-2001	AU 5325801 A	23-10-2001
		EP 1294872 A1	26-03-2003
		WO 0177331 A1	18-10-2001
		US 2002197680 A1	26-12-2002

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 03/03713

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0177331 A		US 2002035056 A1	21-03-2002
WO 0168698 A	20-09-2001	DE 10013296 A1	20-09-2001
		WO 0168698 A2	20-09-2001
		US 2003120049 A1	26-06-2003
WO 0162794 A	30-08-2001	AU 3859601 A	03-09-2001
		WO 0162794 A2	30-08-2001
		US 2003219806 A1	27-11-2003
		US 2002142377 A1	03-10-2002
WO 0146258 A	28-06-2001	AU 2736101 A	03-07-2001
		CA 2395007 A1	28-06-2001
		EP 1257578 A2	20-11-2002
		JP 2004500814 T	15-01-2004
		WO 0146258 A2	28-06-2001
WO 0040614 A	13-07-2000	AU 2055600 A	24-07-2000
		CA 2360396 A1	13-07-2000
		EP 1141017 A2	10-10-2001
		JP 2002536966 T	05-11-2002
		WO 0040614 A2	13-07-2000
WO 0004929 A	03-02-2000	AU 5229199 A	14-02-2000
		WO 0004929 A1	03-02-2000
WO 9909140 A	25-02-1999	AT 253111 T	15-11-2003
		AU 742391 B2	03-01-2002
		AU 9115698 A	08-03-1999
		CA 2298540 A1	25-02-1999
		DE 69819345 D1	04-12-2003
		EP 1009804 A1	21-06-2000
		JP 2001514879 T	18-09-2001
		WO 9909140 A1	25-02-1999
		US 6335180 B1	01-01-2002
		US 2003049728 A1	13-03-2003
		AU 2466799 A	09-08-1999
		CA 2309903 A1	29-07-1999
		DE 69910538 D1	25-09-2003
		EP 1047711 A1	02-11-2000
		JP 2002503451 T	05-02-2002
		WO 9937675 A1	29-07-1999